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THE Publishers take pleasure in presenting the following note from the Rev. Dr. KNOX, of the Collegiate Dutch Church, of this city:

"Having been favored by a respected friend with a copy of 'THE THEOLOGY OF INVENTIONS,' by the Rev. John Blakely, immediately on its issue from the Glasgow press, I have read the larger portion of it with great interest and delight. It is the work of a master-mind. The subject is original in its conception, and is treated with consummate ability. The Divine superintendence in works of invention is demonstrated, and the illustration which they afford, in their nature, order, and respective dates, of the power, wisdom, and goodness of God, is presented in a form the most compact, lucid, and impressive; exhibiting the Author's large, accurate, and diversified knowledge, in a style terse, vigorous, and graceful.

"The work only requires to be known, to obtain the widest circulation. The Messrs. CARTER confer a favor on the reading community by its re-publication.

"JOHN KNOX.

"NEW YORK, January 21, 1856."

THE

THEOLOGY OF INVENTIONS;

OR,

MANIFESTATIONS OF DEITY

IN THE

WORKS OF ART.

BY THE

REV. JOHN BLAKELY,

KIRKINTILLOCH, SCOTLAND.

"This also cometh forth from the LORD of Hosts,
Which is wonderful in counsel, and excellent in working."

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PREFACE.

The present age is characterized by the unprecedented development of science and art. Discovery eclipses discovery as evolved in rapid succession. Mechanical inventions are struggling for precedence, but the strife is short lived. The transitory interest of each vanishes like a passing meteor before the rising of a brighter luminary. The appearance of nature is changing under the transforming power of art. The modern triumphs of genius are harbingers of an approaching physical Millennium. Were it possible that such could be attained by human effort, the age in which we live bids fair to solve physical problems of ancient prophecy. But the record of those bright visions regarding the state of the world, discloses the fact that an Ecclesiastical and Political Millennium must precede, or at least accompany that which shall be Physical. The fallen race must be spiritually prepared, in order to the enjoyment of a full disclosure of temporal blessings.

The human family may be divided into two classes—those who live for time only, and those who live in prospect of a coming eternity. The former class contem-

plates every object, natural and artificial, irrespective of their relations to God. Among the latter class there are many who seem interested in the work of personal redemption, but who have little regard to the manifestations of the Divine attributes in creation, and in the providential arrangements of this fallen world. There are others who devoutly recognize God in the works of nature, and in the plan of redemption, but *few, if any*, are to be found among the majority of professors, who see or acknowledge the attributes of Deity displayed in the works of art.

Scientific students frequently interrogate nature without a sense of its relations to the Creator, and overwhelmed by its wonders, insensibly render to nature that homage which is due to God. Theological students are not wanting, who open the pages of inspiration for inquiry regarding the hope of individual salvation, but who overlook the first and pervading principle of operation in the universe—*the glory of God.* There are mechanical students who investigate the material world in the spirit of selfishness, in order to ascertain how much may be extracted from its vast resources, for their personal aggrandisement. With this class the exposition of the Arts tend to excite the spirit of covetousness, and the homage of their hearts is divided between the worship of Mammon and the adoration of Genius. But opposed to all these views and objects, stands that system of divine religion revealed in the Bible—a system em-

bracing man in every aspect and in every relation. It exhibits the relation of every creature to God, and claims the recognition of the attributes of Deity, as these are manifested in the material, mental, and moral spheres of existence.

Impressed with this fact, the writer has sought in vain for any thing approaching to a general acknowledgment of God in the works of Art, even among those professing belief in Divine Revelation. Occasional hints are found escaping from the pen of distinguished writers, but these usually pass unheeded by the mass of readers; and the references seem so incidental, that the mind is constrained to feel that the subject was not esteemed of much importance by the author. Recognizing the supremacy of God in every department of His works, and believing that dishonor has been done to His name by the non-recognition of His attributes, in the artificial phenomena of the world, the author of the following Treatise has felt constrained, by a solemn sense of duty, to submit to the public the views and feelings which, to his own soul, have invested mechanical inventions with a halo of light—even with the beams of reflected Divinity.

The elementary thoughts hereafter illustrated were suggested within the luminous walls of the Crystal Palace. Every object seemed to re-echo the announcement of the ancient prophet—"This also cometh from the Lord of hosts, which is wonderful in counsel, and

excellent in working." Every hour devoted to reflection upon this subject has convinced the author more deeply of its vast importance and lasting interest. Nothing has diminished the mental pleasure first realized, save a growing consciousness of inability to grasp the magnitude of the theme. The sources of illustration are wide as the world, and embrace every period of human history. Many imperfections will doubtless appear to the mere critic, but it is comparatively of little moment what opinion literary circles may form of these feeble efforts to awaken a new train of thought, provided that general readers may be led to recognize the manifestations of Deity in artificial phenomena, and consequently, respond to the angelic anthem—"Glory to God in the highest, and on earth peace, goodwill toward men."

KIRKINTILLOCH, November, 1855.

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THE THEOLOGY OF INVENTIONS

INTRODUCTION.

Theology is that science which treats of the being and attributes of God—His relations to us, the dispensations of His providence, His will with respect to our actions, and His purposes with regard to our end. One branch of this comprehensive science is termed Natural Theology, or that science which treats of the being, attributes, and will of God, as evincible from the various phenomena of created objects. The first revelation of God to intelligent beings was contained in the book of nature, at the opening of which "the morning stars sang together, and all the sons of God shouted for joy." This comprehensive volume embraces the universe, and reveals to man, in physical development, the eternal decrees of the all-wise Creator. It is, in fact,

the elder manuscript of infinite wisdom, replete in every page with internal and external evidence of its Divine Author. "The heavens declare the glory of God; and the firmament sheweth His handy-works." Creation is the counterpart of the eternal purposes—the embodiment of the Divine thoughts, in specific physical acts, for the manifestation of the attributes of Deity, "Because that which may be known to God is manifest in them; . . . . for the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead."

The Planet inhabited by man is only one circumscribed page of Nature's illimitable register, but yet, in itself, replete with evidence of the being and attributes of God. Nor is that evidence patent to the reflective mind of the philosopher alone, it stands out in bold relief for the perusal of sentient humanity. The unlettered peasant receives from the external world the same sensations as the learned philosopher. Both possess similar rational faculties, however variously exercised, and consequently both enjoy access to Nature's volume, the language of which is none other than the re-echo of the voice of Deity. Unlike the monopolised stores of human literature, the illuminated pages of this book are ever open to all, so that he who runs may read

the stereotyped impressions of the wisdom, power, and beneficence of God.

In the contemplation of terrestrial objects, there are two classes of phenomena which incessantly claim attention—those which are the immediate work of God in creation, and such as are the mechanical productions of man in the progressive development of science and art. The former class may be termed natural ; the latter, artificial. From the natural the artificial phenomena are all constructed. In the natural every thing is created ; in the artificial every object is transformed. God is the immediate operator in the one department ; man is the intelligent agent in the other. While, as regards the whole, the Author of universal nature is the primary source and rightful proprietor of the material, the intermediate agent, and the work of art constructed. In the natural phenomena are to be found all the elements of the artificial. They have changed their place in creation, and their elementary forms of existence, but their essential qualities remain the same under every new arrangement, consequently no circumstantial changes of proportion, locality, or figure, can transfer them beyond the limits of His kingdom—"who is Lord over all." "The silver and the gold are His," when in the mint of the Royal Treasury, or in the coffers of the miser, as

really as when deposited by the Divine hand in the rocky bed of an Australian river, or the hidden caverns of a Californian mountain. The iron and the brass are his as really, when revolving in the wheels and shafts of a modern machine as when in their elemental ore, buried fifty fathoms beneath the surface of the globe. And yet this region of art, this world-wide creation of machinery, is one from which in the mental conceptions of men, the Universal Proprietor is almost entirely excluded. Few indeed, are to be found among mechanics or philosophers, among even divines, or public journalists, who seem to realize the fact that God *is there*, when investigating the wonders of art, or who feel constrained to render to Deity the glory due to His name, from *this*, as from every other region of His works.

In proof of these assertions, it is only necessary to refer to the fact that though the press teems with the records of ancient and modern discoveries in art and science, not a solitary paragraph can be found in the vast majority of treatises recognising the hand of God at all; and in vain is search made for even one systematic volume, presenting a lucid and comprehensive illustration of the wisdom, power, and goodness of God, as these attributes are displayed in mechanical inventions. Or, to make the

matter still more plain, where are to be found emotions of gratitude to the Giver, or feelings of adoring wonder excited in the breasts of men, by the contemplation of a plow, a loom, a ship, a steam-engine, a printing-press, or an electric-telegraph ? The invention may be recorded, its mechanism admired, its utility discussed, and the name of the inventor praised and honored; but how rare the acknowledgment of God as the author ! How few are to be found exclaiming with the Psalmist, " Oh that men would praise the Lord for His goodness, and for His wonderful works to the children of men !"

In discussing the theology of inventions, it is necessary to keep in view the designs proposed, and to indicate the line of argument to be adopted. Both these objects may be attained by the following proposition, which we design to prove and illustrate in the subsequent pages.

That mechanical inventions, in the discovery of their elements and principles, and in the construction of their parts, are, and ought to be viewed as emanations of the wisdom, power, and beneficence of God.

This proposition may be proved philosophically from reason, and theologically from revelation. Both these lines of argument shall be pursued in the elucidation of the subject.

In proving from reason that artificial pheno-

mena, or mechanical inventions are of God, a multitude of arguments might be adduced, but only three are selected—the Fact; the Time; and the Tendency of their Discovery.

CHAPTER I.

THE INTRODUCTION OF MECHANICAL INVENTIONS A PROOF THAT THEY ARE EMANATIONS OF THE WISDOM, POWER, AND GOODNESS OF GOD.

In the early history of the human family mechanical inventions had no existence, save in the purpose of God, and in their original elements, as parts of creation-work. Surveying the world, even from Paradise, what finite being could have predicted their future development? The first man, notwithstanding his knowledge of nature, knew not the necessities of a fallen race, and consequently he could form no conception of that provision which infinite wisdom had made for the mitigation of physical evil, and the future elevation of his descendants. Implements of industry he might require, and, perhaps, be provided with for the cultivation of that garden which he was commanded to dress and keep; but of rooting out the thorn and the thistle—productions of the curse; of manufacturing clothing—the permanent want of a fallen state; of building or furnishing habitations, in accord-

ance with circumstances and climate, in a world whose elements and seasons were affected by the introduction of moral evil; or of the implements necessary for the construction of these, he could have no idea in a state of innocence. The world was destitute of machinery on that fatal day when offended Deity "drove out the man." Natural phenomena might retain much of its pristine freshness and beauty, but then artificial phenomena had no visible existence. The whole world did not exhibit one artificial human dwelling, while the entire wardrobe of our first parents, when thrust forth from the garden, was comprised in the fig-leaf aprons wherewith they were covered. Contrast with this the magnificent cities of ancient or modern times—the wide-spread cultivation of the earth—the trackless ocean navigated—the subterranean mines of wealth disclosed—the human family clothed, and fed, and domiciled in comfort—knowledge circulated for the million, and human thoughts wafted on the wings of the lightning. Contrast again the natural phenomena of that world into which Adam was thrust out with the artificial phenomena which it now exhibits, under the industrial arts of his descendants, and will any reflecting mind be prepared to say that man, and man *only*, is to be recognized as the author of every successive development of the mechanical inventions?

ELEMENTS OF MACHINERY.

While investigating mechanical inventions, the question naturally arises, What are their constituent elements? What their mechanical powers? Whence their origin? By whom have their materials been discovered, and their various parts constructed? As regards their native elements, the most complicated, as well as the simplest, may be traced to three sources—the mineral, vegetable, and animal kingdoms. Take a hand-loom, or a spinning-mill; analyze their entire machinery, and it will be found that the bowels of the earth have contributed their portion of iron or brass, or other elements. The surface of the globe has produced the wood, the hemp, the flax, the cotton, the oil, and other vegetable products. The animal kingdom has furnished the leather, the bone, the hair, the grease, and all the different substances brought into requisition. These materials have no natural relation—no chemical affinities, no self-approximating influences, no self-adjusting properties. Drawn from three distinct kingdoms in nature, they are, by a mechanical combination, made to assume an entirely new form—to occupy a new place, and to accomplish a new purpose. The mineral elements have been extracted from the regions of darkness. They have been

smelted, moulded, or beaten into a thousand forms. The wood has been hewn by the axe, divided by the saw, smoothed by the plane, and fitted by mechanical tools, before it assumed its place in conjunction with the brass and the iron. The flax and the hemp have been watered, dried, the fibre separated from the stem, drawn out and twisted by machinery, before it could be used in binding the lighter parts of the wood and the iron. And in the products of the animal kingdom there are similar transformations. The outer covering which protected and beautified the body of the horse, the ox, or the sheep, has been stripped off by the hand of violence—divested of its hair or wool, impregnated by the art of the tanner with lime from the mineral kingdom, with the juice of astringent barks from the vegetable kingdom, and oils from the animal kingdom, before it could take a place in the revolving bands of the spinning-mill, or furnish an element in forming the more simple driving-pin of the hand-loom. The same analysis, applied to any other specimen of machinery will reduce its constituent elements to one or other, or all of these kingdoms. Let the mind reflect upon this threefold source of material substances, from which all the mechanical inventions in the world have been, or are being, or shall be constructed, and let it be remembered

that these are only elements, and cannot of themselves assume the form, or exert the power of the simplest machine. But they are elements provided by the God of infinite wisdom for the very purposes to which man has been taught to apply them.

The world itself, in its geological construction, as well as in its vegetable and animal adaptations, is none other than a divine depository of exhaustless resources, from which man may draw forth and appropriate whatever tends to his physical comfort and mental progress. But here, as in every other department, the forethought is more than human, while the power and beneficence are evidently divine. The adjustment in every region is such as to confound the most reckless sceptics. The minerals have been stowed away in the subterranean caverns of the earth so that they might not destroy its vegetable productions by their deleterious gases, deform its beauty by their unsightly appearance, or impede the operations of the animal kingdom by abridging the extent, or rendering unfruitful the surface of the globe. They are neither so near the circumference of the earth as to induce indolence, nor so deeply deposited as to elude the search of human ingenuity. The outer stratum seems as if designed to meet the wants and stimulate the ardor of a barbarous age, while

the inner stores of mineral wealth are so deposited as to test the highest achievements of mechanical skill—to draw out the accumulating stores of knowledge—and to excite the latent principles of art and industry. Can all this provision be laid up since creation, or formed in successive geologic periods by unknown influences in the mineral kingdom, without a definite design? Reflect again upon the vegetable and animal kingdoms, as stored by creative power, and preserved by Divine Providence. The former was furnished with trees, and plants, and herbs, each bearing seed and propagating its species after its kind. The latter was stocked with all the varied forms of animal life, having the earth, the air, the sea, as their appointed regions, and under the pristine law of life to multiply and replenish the world from age to age. Could all this provision be made for the construction of machinery without that wisdom which is infinite, that power which is almighty, and that goodness which is boundless?

MECHANICAL POWERS AND FORCES.

These elements, however bountifully provided in the kingdoms of nature, would be entirely useless for the construction of the simplest machine, unless accompanied by mechanical principles or laws, which are universal in ex-

tension, and immutable in operation. The entire range of mechanical inventions may be reduced to a few primary machines, which, in natural philosophy, are termed mechanical powers. These have been usually treated of as six—the lever, the wheel, the axle, the inclined plane, the wedge, the screw, and the funicular machine. It is evident that these six may be reduced to three—the lever, the funicular machine, and the inclined plane; and from two of them—the lever and the inclined plane, the other three are formed. From the varied combinations of these all machinery is constructed.

But these mechanical powers, as well as the material substances, would of themselves be unavailing for general purposes in machinery without moving forces to originate and sustain their varied motions and revolutions. These again are liberally supplied in the wide domain of nature for the use of man, in the development and application of the arts of industry. The *moving powers* have usually been treated of as follows: The *muscular strength of men and animals*, the *pressure of the atmosphere*, the *expansive force of steam*, and the *action of wind or water*. These may also be referred indirectly to three independent sources—*gravity*, *heat*, and *animal strength*. The earlier development of machinery exhibited only the application of

animal strength; the present state displays the general use of *wind*, *water*, *steam*, and explosive substances; but, doubtless, in the onward march of discovery, electricity will soon come to occupy a common place among the moving powers, and the world will be as much astonished when a "feed of zinc and water" shall supersede a "feed of coke," as it was when a "feed of coke" superseded a "feed of corn," and the iron wheels of the engine completely distanced the fleetest and best directed steed. Now, let it be remembered that all these *latent principles*, *mechanical powers*, and *moving forces* are furnished in nature, and have been existing since creation, as provided for the use of man in his present condition. Does not each, in the region of natural phenomena, and do not all, in their mechanical combinations, proclaim the presence and power of Deity?

THE INVENTOR.

Having discovered the materials from which machines are constructed, and the mechanical principles, powers, and forces upon which their operations depend, the question which now demands solution is, by what agency were these created materials, superinduced principles, and external forces all combined, and rendered capable of transforming other mineral, vegetable,

and animal substances into forms, and fabrics suitable for nourishing, clothing, protecting, and enlightening men. Here we not only reach but cross the boundary line between the material and the spiritual. The agent is man, and in his constitution there is a combination of the mental and physical, but both are brought into active operation in the construction of machinery. His body is formed of the dust by a Divine hand, and his breath is breathed into his nostrils by an Almighty Spirit. That body in itself presents some of the most wonderful and perfect specimens of mechanical phenomena. "The anatomy of man," says Galen, "discovers above six hundred muscles, and whoever only considers these, will find that in each of them nature must have, at least, adjusted ten different circumstances, in order to attain the end proposed—proper figure, just magnitude, right disposition of the several ends, upper and lower position of the whole, and the due insertion of the several nerves and arteries; so that, in the muscles alone, above *six thousand* several views and intentions must have been formed and executed." He calculated the bones to be two hundred and eighty-four, and the distinct purposes aimed at in the structure of each above forty. This makes eleven thousand three hundred and sixty! What a prodigious display of artifice even in

these simple and homogeneous parts! But if we consider the skin, ligaments, vessels, glands, humors, and the several limbs and members of the body, how must our astonishment rise in proportion to the number and intricacy of the parts so artificially adjusted! Who can survey this wonderful structure without admiring the wisdom and power of the Architect? How appropriate the language of the Psalmist, "I am fearfully and wonderfully made." Now this body of man is the primary instrument—the living machine, by which the God of providence discloses the wonders of the entire region of artificial phenomena. In nature God employs intermediate causes to produce the designed physical effects, so in like manner, when the Divine purposes of goodness and wisdom are to be embodied in the production of mechanical phenomena, man is the intermediate agent commissioned to construct them—the mental causation of their new existence. But for his wants, machinery would be unnecessary, and but for his mental and physical endowments for labor, the minerals, vegetables, and animals might run to waste without any new form of mechanical beauty or utility being added to the phenomena of the world.

Without the human hand how would discoveries be made in science, or the arts de-

veloped? A few operations might be performed, such as are common to some of the irrational creatures, but progress would be utterly impossible. The hand is the organ of prehension, which readily seizes and secures bodies of every form, and of such dimensions and weight as are capable of being moved by the arms of man. It has been well remarked that had the hand been undivided it could only have held such a portion of any mass as was equal to itself; but, as it is, by separating the fingers, it can encompass one larger than itself; and, by compressing two of them together, it can safely hold a minute object. Besides, as some bodies are too large to be held by one hand alone, we are endowed with two inclining towards, and precisely adapted to each other. The sensibilities of the hand, in respect of touch, are not less remarkable, as at once determining the nature of substances, as regards hardness and softness, roughness and smoothness, fineness and coarseness, heaviness and lightness, hotness and coldness. While the eye scans material elements, the hand grasps them, completes the scrutiny which the organ of vision had begun, and then applies them to practical purposes. By the hand they are arrested and shaped anew and combined in curious mechanism to form this, or that machine.

But while we speak of the human hand, or the

human body, as the constructor of every form of mechanical phenomena, we necessarily indicate mental operations. There must be a motive power, propelling, directing, and controlling this material organism. The moving power is the mind—the spiritual part of man's nature. It has been already shewn that the material substances and mechanical powers could not be of general utility without moving forces, so here, even the human body could be of no utility in the construction of machinery without the reasoning powers of the mind. In this case the physical organization is inhabited by a living, thinking agency—a spiritual motive power within, whose volitions are the moving springs—the originating cause of the external movements of every joint, and muscle, and limb. The mind thinks regarding an end in view, and the volitions of the will propel the feet towards a chosen object, and move the hands by which it is appropriated for a given purpose. The mind reflects and reasons regarding the end to be attained, and the means provided, adjudging the proportions, and planning the various parts of the machine; which ultimately takes its form from the arranging mechanical hand of the artist. Nor is the mind the contriver only; its volitions direct every part of the execution. It is, in fact, the moving power, without which the hand becomes para-

lysed, the eye ceases to observe, and the whole machinery of the human system ceases to operate, and the elements of nature retain forever their original form of existence.

Let it then be kept in view that the whole development of artificial phenomena is the result of human ingenuity, the discovery and construction of human effort, and that every mechanical hand has been directed and moved by an intellectual agency, then it will appear that the progress of science, and the development of art, are but the historic records of man's mental and physical capabilities. Thus—as has been already shewn—while the earth is replenished as a vast magazine of materials, man, the sentient being, is constituted the artizan in the midst of these, that as a philosopher, he may discover their existence, and, as a mechanic, apply them to their respective uses. But though a microcosm within himself, and though giving form to every object in the world-wide circle of the industrial arts, he is, nevertheless, but a monument of the wisdom, power, and goodness of Deity—an instrument in the Divine hand, by which the God of providence effects those transformations upon material substances which infinite wisdom has planned, and almighty power will duly accomplish. The most exalted philosopher, the most distinguished genius, the most skilful

mechanic, occupies only a place in the wide domain of creation as a servant, and fulfills his appointed mission in the mysterious developments of Providence. However high he may soar upon the wings of genius above his contemporaries, he is not a God to create one solitary element in the field of nature, or to bring into operation one primary power, or to construct a machine absolutely original. His work is to discover, apply, and exhibit, in new combinations, those elements, proportions, and principles which have had a place in the Divine mind from eternity, and which have been amply provided for in the primary and progressive acts of creation. It is thus, that while angels are commissioned to loose the seals of the mysterious book of Providence, men are employed to unlock the treasury of nature ; and by the application of mechanical laws to material substances, to bring into operation an entirely new class of objects, designed at once to show forth the glory of God, and promote the comfort and happiness of the human family.

But while the objects mechanically made are superinduced upon nature, they are not new creations. Mechanical inventions are but the gradual development of nature's elements in new forms, in new relations, and adapted to new purposes. Besides, it would be no difficult task

to shew, that in nature itself are to be found the primary suggestions—the elementary models of all artificial mechanism. Much that passes for invention in the works of art is merely an imitation of nature, and that which constitutes the most complicated machinery is simply the expansion, or new combinations of those primary examples. Thus Pope well remarks, regarding man, that he will

> "The art of building from the bee receive,
> Learn of the mole to plough; the worm to weave;
> Learn of the little nautilus to sail,
> Spread the thin oar, and catch the driving gale."

It is here, however, that reason rises transcendently above the most peculiar of the animal instincts. The latter can do much; can do all that is necessary for the preservation and enjoyment of irrational life. But though they are perfect in their kind, they are absolutely stationary.

> "The winged inhabitants of Paradise
> Wove their first nests as curiously and well
> As the wood minstrels of our evil day."

Whereas human ingenuity pursues a steady course of discovery, and marks each succeeding age with its well defined monuments of scientific progress. But while reason soars sublimely above the achievements of instinct, and while, in the

advancement of human knowledge, one generation looks back with wonder at the feeble efforts of genius in a preceding age, and forward with anticipation to the future triumphs of science soon to be disclosed, yet, this elevation, or mental expansion, is but relative—but different degrees of mental development in the creature. Ascend high as it may in any future age; penetrate though it should through the hitherto hidden strata of the mineral deposits; encircle though it shall the entire surface of the globe with the trophies of genius, it approaches not the infinite; it bursts not the bounds of creation; it produces nothing unforeseen, or unprovided for, in the stupendous plans of infinite wisdom.

"To improve and expand is ours, as well as to limit and defeat;
But to create a thought or a thing is hopeless and impossible."*

OBJECTION ANSWERED.

Some may object to this theory, and be ready to ask, Do you make man only an instrument? Do you place him in the same category, with his reason, as the irrational animals with their instinct? Is not a man a free and moral agent? Is he not a being capable of vast elevation in the proper exercise of his mental faculties? Will

* Proverbial Philosophy.

you divest him of the glory of his genius and mechanical skill? To this it is replied: Man is, indeed, an instrument, though a free and moral agent. The gift of reason, though it constitutes him a free, does not necessarily render him an independent agent. He can reason and plan, and operate upon given materials. He can appropriate and arrange them in accordance with a definite design; but all these operations, whether mental or physical, are conducted within given limits—the limits of finite capacity and relative circumstances. No elevation or expansion of his intellectual faculties; no degree of physical capability, can raise him above the rank of a creature, or render him independent of the Almighty Creator. It is admitted that he rises transcendently above the most sagacious of "the beasts that perish," but it is only by so many degrees in a finite scale, which, in its loftiest elevation, can bear no proportion to the infinite. He can, in his own appropriate sphere, work out the plans of infinite wisdom. He can, in the exercise of reason, discover, and apply what God has provided and bestowed for his sustenance and comfort; but this can never constitute him proprietor, either of his own faculties and physical adaptations, or of those elements upon which his genius and skill have produced such vast transformations. He is to be viewed rather

as the exhibitor than the original designer; as the servant disclosing the hidden riches of his master, rather than the proprietor setting forth his peculiar treasures. Indeed the artizan and his work are both designed to shew forth the glory of one Divine Author. In the exhibition of redemption men are represented as "workers together with God," when they employ the means which infinite wisdom has prescribed; so, in like manner, the inventor of machinery, irrespective of his moral characteristics or designs, becomes a fellow-worker with God in the physical world—an instrument by which the divine plans for the benefit of the human race are accomplished. He stands in the position of one whose province it is to search out and display the boundless resources of the Divine Proprietor. He is commanded to "subdue the earth;" that is, by industry to discover, and to appropriate what infinite goodness has provided for the mitigation of the curse, and the physical renovation of a fallen world.

It is freely admitted that the man who makes a discovery, or who invents an original machine, ought to enjoy the fruits of his labor, and ought to be honored by his fellow-men as a public benefactor. But, when viewed in his relation to God, the Author of all that is material in his machine, and of all that is mental in its

plan and construction, he is only a servant, and, as such cannot usurp the claims of his Master. While the laborer is worthy of his reward, and ought to be recognized by tokens of gratitude, the glory, in its high and proper sense, belongs to God. It is true, in the experience of the world, that at certain epochs peculiar discoveries have been made which have completely changed the currents of human history. With these discoveries stand associated distinguished names through coming generations. But how limited are the conceptions of the most celebrated philosophers or inventors of machinery? Sir Isaac Newton could scan the heavens, and calculate the distances, densities, and velocities of suns and systems, and yet might be very ignorant of the method of constructing some of the simplest machines. James Watt could form his models, and study the powers of steam until he astonished the world by his locomotive engine, and yet, with regard to thousands of other problems in art and science, he might be profoundly ignorant. And thus it is found in every other department. Yet even one happy discovery is sufficient to render the name of the inventor illustrious, though the development of all will scarcely lead the human mind up to God the author. By the invention of one machine the entire stock of individual genius may be

exhausted—the sands of life may be run out ere the invention has proved its utility. It is thus that many benefactors of the race have sunk in penury, while their discoveries have enriched the world. What is then the boasted genius of the most distinguished inventor, which is thus absorbed and expended upon one solitary object, compared with the mind of the Infinite, which grasped from eternity, in one embrace of benevolence to man, the entire region of artificial phenomena? How vast that mind which is able to comprehend the entire system of things celestial and terrestrial, past, present, or yet to be unfolded! How amazing the wisdom and goodness of Him who created the earth for a holy being, and yet adapted it to the circumstances of his posterity as fallen! How wonderful that foreknowledge which adapted the material world to the mental constitution of the human race, so that man becomes at once the exponent of the physical world and the reflector of the spiritual! Nor is this the privilege of the distinguished philosopher only. Amid the thousand departments of science and art, of speculative philosophy and practical life, the humblest, as well as the most exalted genius, may comprehend at least some portion of the mechanical phenomena, and fulfill his mission by contributing his part to the production of the whole. It is thus that the one com-

prehensive plan of infinite wisdom furnishes scope for innumerable efforts—for all varieties of taste and talent, while affording to each the distinguished privilege of furnishing his part in the accomplishment of the common design. Thus human interests and human genius harmoniously unite in the development of the world's resources—in filling up the original scheme of divine providence, while all are permitted

> "To join
> Their partial movements with the master wheel
> Of the great world, and serve that sacred end,
> Which He the unerring reason keeps in view."

Viewed in this aspect, machinery becomes the type of mental and physical capabilities; and, consequently, if the work of art is admired, how much more will admiration rise in the contemplation of those mental powers and physical adaptations by which, from the elements of nature, the whole machinery of the world has been evolved. It has been well remarked by Coleridge, that, "as a fruit-tree is more valuable than any one of its fruits singly, or even all its fruit of a single season, so the noblest object of reflection is the mind itself, by which we reflect. And as the blossoms, the green and ripe fruit of an orange tree, are more beautiful to behold when on the tree, and seen as one with it, than

the same growth detached and seen successively after their importation into another country and different clime, so is it with the manifold objects of reflection when they are considered principally in reference to the reflective power, and as part and parcel of the same. No object, of whatever value our passions may represent it, but becomes foreign to us as soon as it is altogether unconnected with our intellectual, moral and spiritual life. To be ours it must be referred to the mind either as motive, or consequence or symptom." If then the fruit-tree is more valuable than any of its fruits, and the produce in its native state, as attached to and growing out of the tree, more beautiful and interesting than when ultimately plucked, so the progressive development of science and art is most instructive and most interesting when considered in its relation to man as the exponent of his mental and physical capabilities. Thus, in the philosophy and history of artificial phenomena, man himself occupies the foreground in our mental conceptions; and, while we trace the development of the arts to the human constitution, and to the conditions and circumstances which gave birth to industry, we are prone to give up our inquiry as if we had here reached the author. But here, again, the aphorism quoted holds specially true; for man himself is but one of the fruits of infinite wisdom

and almighty power, and, consequently, ought to be viewed in all his mental and physical developments in relation to the purposes and plans of the Universal Proprietor. That divine mind which planned the entire scheme of the world's physical economy, also embraced the creation of all the secondary agents and elements destined to produce certain effects. The reasoning, reflecting, operating mechanical agent *is his*, as much as the mineral, vegetable, or animal substances upon which he operates, or the latent causes in nature, which are incessantly producing chemical effects. The variety of artificial phenomena is then to be viewed as the type of mental and physical variety, while the spirit of industry, as a whole, becomes the exhibition of infinite wisdom, power, and goodness.

The capability of man in seizing material substances, and evolving latent principles, so that inanimate machinery is made to occupy the place of human hands, has been admired in every age. The perfection of form, and the precision of operation attained, have elicited the highest eulogiums towards the inventors or mechanics of modern machinery. But the most perfect instrument ever invented comes infinitely short of that perfection which characterizes the human system—add to this the mind as a motive power within, moving, directing, controlling,

and restraining all the physical operations in the mechanical world ; and is there not here an agent which rises transcendently above every other instrument of a terrestrial kind, in working out the purposes of the God of Providence ? If we admire the displays of infinite wisdom and goodness, in creating and preserving the material elements, from which implements of industry are constructed, what shall we say in the contemplation of this living instrument—*this reasoning, self-acting machine*, by which all others are brought into operation ? shall we not exclaim with the Psalmist ? " O Lord, how great are Thy works ! and Thy thoughts are very deep."

What we plead for is, that the achievements of man, in subduing the world, shall not be considered as *his* exclusively, but that the inventor and the invention shall both be recognized as instruments, in accomplishing the plans of infinite wisdom, and shewing forth the Divine glory. They are to be viewed as co-relative agents in the consummation of one mysterious plan, and though one has only a physical, while the other has a mental and moral relation to the Divine Author, both are designed to exhibit his infinite perfections.

In surveying a work of art it is impossible to separate entirely the implement from the inventor in our mental conceptions. Let this

principle be carried out to its legitimate conclusions, then the inventor and the invention will unite in lifting the mind towards the Author of both. Then, we shall not only admire the "marvels of science," or dwell with delight upon the utility of this or that machine, but man himself, a living, reasoning, intelligent, industrial instrument, shall be viewed as in the hand of God; nay, as a "fellow-worker with God," in rendering available the vast resources which infinite beneficence has provided for the comfort, as well as the mental and physical progress of the human family.

THE ARTS IN RELATION TO THE FALL.

The well-known aphorism, "that necessity is the mother of invention," is illustrated by the whole progress of the arts as developed in this fallen world. The discovery, by sin, of their nakedness gave the first impulse to Adam and Eve in the arts of industry. Having eaten of the forbidden fruit, "the eyes of them both were opened, and they knew that they were naked; and they sewed fig leaves together, and made themselves aprons." This was the first effort of mechanical genius, stimulated by want, and directed by reason, and may be considered, not only as the consequence of the fall, but also as the symptom of man's future mechanical

triumphs. That the arts have been developed, in connexion with the introduction of moral evil, is no argument against the claims of God as their author. As sin gave occasion for the exhibition of the plan of redemption, so it has given opportunity for the gradual development of the entire plan of that providential economy, which, in the divine decree, anticipated, and provided for the circumstances of a fallen race. The fact of the fall by sin multipied the wants of man beyond conception. He required food from a barren soil, blighted by the curse, and only rendered fertile by the sweat of his brow. Cultivation became his standing employment, but this art required the invention of implements, either simple or complex, as the circumstances of the case demanded. We have already traced the source of these to the mineral, vegetable, and animal kingdoms. But how will man discover the depository or use of iron, the application of wood, or the appropriation of the living services, and the use of the dead remains of animals ? Will chance provide the materials, or direct to their mechanical application ? The idea is utterly absurd. As soon might the earth be expected spontaneously to pour forth its metals moulded for the machine. As soon might the tree of the forest be expected to bow its head and lop off its branches, and smooth its trunk

for domestic purposes. As easily might the ox be expected to leave his pasture, and wreathe a yoke for his own subjection and servitude. Is the mind of man adequate to foresee the necessity, or his power sufficient to supply the want, or his benevolence so comprehensive as to meet the case of all? Verily no. Of this we have ample evidence in the occurrence of every day life. The collective experience of centuries, and the accumulated wisdom of the mightiest nations on earth, are found at times inadequate to provide against the contingencies of a foreign campaign, or even to convey with regularity, food and clothing to a few thousands of gallant troops fighting in the distance the battles of their country. Public opinion may blame this Cabinet Minister or that department official as it will, the fact speaks volumes, and is calculated to teach us the poverty of human foresight, and the utter insufficiency of human wisdom or power to provide even the channels through which heaven's bounty may be administered. Contrast with this the full provision which was made in the formation of the globe, and which is continually supplied through innumerable channels from age to age, for meeting the wants and increasing the comforts of the fallen human family. What mind but the Infinite could have anticipated the wants of a race of moral beings,

having forfeited their first estate, and having completely changed their relations to other moral beings and material things? But here, we see the exhibition of that prescience which "knoweth the end from the beginning, and from ancient times the things that shall come to pass," and the intervention of that power which can control every event, and render every element subservient to the eternal decree and purpose. Contemplate artificial phenomena as we may, in its relation to man and to nature, no cause can be assigned sufficient for the transformation displayed, or for the effects produced, unless we attribute it to that God who has said, "My counsel shall stand, and I will do all my pleasure."

THE INDUSTRIAL INSTINCT IN MAN AN ELEMENT IN THE DEVELOPMENT OF THE ARTS.

That the enjoyment of the blessings promised is realised by the industry of man, militates not against our argument. The capability for labor, whether mental or physical is of God, and by Him also were planted the instincts of industry. The established connexion between toil and enjoyment is, that unless a man submits to labor many of his wants must remain unsupplied, and many of his desires ungratified. By the slothful man the riches of nature are allowed to

run to waste, while physical misery is prolonged and extended. Instead of assuming the place which God has assigned him as lord of creation, he continues a slave; he remains a savage—naked, helpless, and destitute of domestic comfort. But, on the other hand, the man who has the instincts of industry awakened within him, and who has by exercise matured these latent principles, and who has tasted the sweets of his daily toil—that man has entered upon a course of progress; he has taken hold of his original charter, and nature itself is so adapted as to yield to his continued efforts. It is true that man labors for himself, and the distinctions of property become a stimulus to exertion, but while he labors for himself he is filling up his place in the comprehensive plan, and benefitting his species. By the exercise of those powers wherewith the Creator has endowed him he can subdue and rule over that physical domain accorded in his original grant. It is thus that one of our poets* represents the transition from savage to civilized life:

"Industry approached,
And roused him from his miserable sloth,
His faculties unfolded; pointed out
Where lavish Nature the directing hand
Of art demanded; showed him how to raise
His feeble force by the mechanic powers:

* Thomson.

To dig the mineral from the vaulted earth;
On what to turn the piercing rage of fire;
On what the torrent, and the gathered blast;
Gave the tall ancient forest to his axe;
Taught him to chip the wood, and hew the stone,
Till by degrees the finished fabric rose;
Tore from his limbs the blood-polluted fur
And wrapt him in the wooly vestment warm;
Nor stopt at barren bare necessity,
But still advancing bolder, led him on
To pomp, to pleasure, elegance, and grace;
And breathing high ambition through his soul,
Set science, wisdom, glory in his view,
And bade him be the lord of all below."

CHAPTER II.

THE GRADUAL DEVELOPMENT OF MECHANICAL INVENTIONS AN EVIDENCE THAT THEY ARE COMMUNICATED IN ACCORDANCE WITH THE PURPOSES OF GOD.

THE second branch of our argument bears upon the date of discovery, or the characteristics of society at the time when some of the most remarkable inventions have been brought into general requisition. The relations of time in their successive development, as well as the fact of their construction, furnish an invincible argument that the God of infinite wisdom has fixed the period, and that in the dispensations of His providence, He has raised up the inventor, and so arranged concomitant circumstances as to open a channel for the application of the machine. This might be illustrated by the whole history of mankind; for the history of the arts reaches back to the expulsion from Paradise, and may be viewed as the record of man's intellectual and physical progress. And what is the history of the human family but the

register of facts evolved in the exercise of God's physical and moral dominion in our world? It is freely admitted that there has been a disturbing element—the introduction of *moral* evil, which has changed the entire aspect of human history, opened the bitter fountains of sorrow, and given dominion to the "king of terrors." Besides, sin has been the *moral* cause producing vast *physical* changes upon the world, in accordance with the curse pronounced by the righteous Governor. But amidst these convulsions, physical and moral, the reflecting mind will be able at all times to trace the over-ruling and directing providence of God. Universal nature bears the impress of infinite wisdom and Almighty power, while every page of human history displays the outgoings of a boundless beneficence. A beneficence, however, regulated by restraining circumstances in relation to labor, discovery, and invention, without which the introduction of sin to a world, constituted as the earth was at creation, would have involved the human race in physical as well as moral ruin. Truly may it be said that, "were God to let the world alone, man would become a fiend; angels would flee as from another Gomorrah, and cease to minister to it: Satan, wearing the regalia of hell, would lord it over sea and land, and time commencing with Paradise would end with Pandemonium."

It is worthy of observation that, throughout the history of man's social progress—while the characteristics of the age, imparted an impulse to the inventive faculties, the inventions themselves gave a new impulse to society. The triumphs of genius are thus the monuments of human progression, each adapted to its respective age, and all tending to universal development. Could there be a more convincing proof of the hand of God in the history of inventions than the fact that each important discovery has been made at the *very time* in which it was most calculated to ameliorate the condition of the human family? In proof and illustration of this, only a few examples can be selected from the entire field of artificial phenomena. But what holds true of the more important and conspicuous machines—which are but parts of the whole mechanical development—is also true of the least of these, in its relative position, and of the entire range of inventions, in their relations to each other, and to humanity.

THE MARINER'S COMPASS.

The discovery of the mariner's compass in its relations to, and bearings upon other discoveries, has, in the providence of God, changed the whole aspect of society, and as the silent guide of the heralds of truth, amid the dark and

jarring elements of nature, it is destined to produce greater changes throughout the entire globe. *The art of navigation* reaches back to the days of antiquity, but the invention of the mariner's compass is comparatively modern. Navigation, simply considered, is the art of conducting a vessel by sea, from one port to another. This art was, doubtless, known in the first ages of the world, though we have no record of any floating vessel previous to the Ark of Noah. In subsequent Scripture records the references to navigation prove that the whole art was in a very infantile state, compared with what it has now attained. It is true that ship-building and coast sailing had been in operation from time immemorial, but down till the time of the discovery of the compass, the ocean had not become the pathway of nations. Fleets, though safely launched and ably manned, were continually land-bound—not by the opposing elements of nature, but in consequence of the want of an instrument by which the mariners might discover their locality, and mark their direction amidst the trackless waste of waters. How dreary the coasting trade of such times as those of Solomon, when his well appointed fleet, in company with that of Hiram, King of Tyre, could only reach and return from Tarshish once in three years? How slow and uncertain

the voyages accomplished by the Phenicians, Carthagenians, Egyptians, Romans, and other nations of Europe and Asia? With no guide but the sun by day and the stars by night, uncertainty marked every attempt to cross even the larger estuaries of the sea. Whenever the sky lowered, or the storm-cloud collected, these ancient seamen were thrown into alarm lest they should be carried in a course entirely different from that intended, or landed upon some unknown and inhospitable shore. The dangers and difficulties of ancient navigation are evident from the deliberations, great preparations, and alarms of Homer's heroes, when proposing to cross the Egean Sea, a voyage of not more than 150 miles; and the expedition of the Argonauts, under Jason, across the sea of Marmora and the Euxine, to the Island of Colchis, a distance of only four or five hundred miles, was celebrated as a most wonderful exploit, at which the gods themselves were said to be amazed. The history of Paul's travels, recorded in the Acts of the Apostles, corroborates the same fact, respecting the difficulty of navigation without the compass. "When neither sun nor stars in many days appeared, and no small tempest lay upon us, all hope that we should be saved was then taken away." Being deprived of their guides—having lost their reckoning, and sight of land;

even though they might weather the storm, they had no idea whither their course would lead them, as now tossed and driven up and down in the Mediterranean. This was but one hopeless bark among many, that, by undue detention, or by storms, were in those days of infantile navigation tossed upon the troubled waters of Adria, and wrecked upon the barren shores of the island of Melita. It was not until the discovery of the polarity of the magnet, and the invention of the mariner's compass, that distant voyages could be undertaken, that extensive oceans could be traversed, and commercial intercourse opened up between remote continents and the islands of the sea.

It is not to our purpose to trace the history of this discovery, nor to consider the comparative claims of those supposed to be the inventors of the compass. The subject is at this distance of time involved in obscurity—an obscurity which is calculated to evince more clearly the hand of God in a discovery and invention, which in their first application were deemed unworthy of record, though their results have astonished and enriched the world. But it is of little consequence to our argument to be deprived of explicit historical testimony regarding the name of the individual who first discovered the fact of the Northern attraction for iron, or who first

balanced the needle in the formation of a compass, as it is chiefly with the state of the world at that period that we have to do, and the influence which this discovery has imparted to the whole circle of the sciences, to politics, to religion, and to all the interests and comforts of social life.

The polarity of the magnet has existed from creation. The iron had been in use, at least, from the time of Tubal-Cain, whose name is recorded in the fourth chapter of the book of Genesis, as "an instructor of every artificer in brass and iron." The mind of man possessed the same mental powers, his curiosity was as easily excited, and his ambition for wealth and for territory as great during these, as they have been during any succeeding periods. Progress had been made in other mechanical departments; as Nineveh, and Babylon, and Jerusalem, and Rome give evidence. But this discovery of the polarity of the magnet was merely a matter of observation, *and yet not observed*, till that period when the God of Providence designed by its instrumentality to open up the world, and accomplish the original purpose, that the human family should multiply, subdue, and possess the earth.

From the contradictory claims of different countries, as to the discovery of the polarity of the magnet, it is impossible now to fix upon the precise

date when the natural fact was made known, yet it is evident, from authentic history, that the mariner's compass was not commonly used in navigation before the year 1420, that is, only a few years previous to the invention of printing. That the loadstone had the property of attracting iron was known in all ages, but its tendency to point to the north and south was only discovered about the beginning of the twelfth century, and its application to practical use in the art of navigation was still a secret, until the beginning of the fifteenth. The simplicity of the discovery, as transmitted by traditionary records, marks the hand of God as there. It was not, as might have been expected, some scientific mariner, speculating like Columbus upon the probability of discovering a vast continent beyond the world of waters, or the best means of obtaining a sure guide across the trackless element. Nor was it a traveller, burning with ardent desire to explore some hitherto unknown country. Neither was it a learned philosopher seeking the solution of a problem that might render his name illustrious in coming generations, but, according to the uncertain traditions which have reached us, "some curious persons were amusing themselves by floating a loadstone suspended upon a piece of cork in a basin of water, which, when left at liberty, was observed to point to the north. In addi-

tion to this, it was observed that a piece of iron rubbed with loadstone acquired the property not only of turning to the north, but also of attracting needles and the filings of iron. Thus the elementary idea was communicated, and scientific minds and mechanical genius left to apply the boon conferred upon humanity. It is not to our purpose to cast any light upon the steps of progress, the experiments, the failures, or the triumphs of science, in the elucidation of this discovery. Nor shall we notice the prejudice which in this, as in every other case of mechanical progress, was ready to enchain this world-wide principle as a thing of nought. Neither can we dwell upon the complete revolutions, physical and mental, which it has already produced. Suffice it to say, that the discovery of this simple elementary fact, a fact which had always existed, speedily cast a new aspect over the entire globe. Oceans, hitherto unknown and trackless, became the pathway of the nations. Countries and kingdoms, hitherto isolated, were brought into neighborhood. The vast world of waters, heretofore supposed to be an insuperable barrier to commerce, was subjected to the use of man. The original command to replenish the earth and subdue it, was re-echoed from the mountains and the valleys of hitherto unknown regions of the earth, laid open by every successive discovery;

while the last injunction of the ascending Redeemer, to "go into all the world, and preach the Gospel to every creature," became practicable to the Church, even unto the ends of the earth. The discovery of this natural principle, and its embodiment in a mechanical instrument, has been succeeded by the revelation of vast continents and islands unknown to the European world, and the establishment of friendly and commercial intercourse between the remotest regions of the earth. Without the aid of this distinguished invention, America, in all probability, would have remained a secret to the Eastern nations; Australia, the fifth great division of the globe, the numerous islands in the Indian and Pacific Oceans, the isles of Japan, and other immense territories inhabited by human beings, or yet to be inhabited, would have remained as much unknown and unexplored by the nations of Christendom as though they had never existed. As these were the sole depositories of the records of revelation, they could never have transmitted the glad-tidings of salvation to unknown tribes of mankind, of whose existence they were entirely ignorant. Even though the whole terraqueous globe had been stretched out before them, and its seas, and oceans, and continents, and islands mapped with precision, without this natural, yet artificial guide—the compass—to direct their

course amidst the billows of the ocean, they could have afforded no light and no relief to cheer the moral gloom of those distant nations, "who sit in darkness and in the shadow of death." Though the art of printing had been discovered, and the sacred volume multiplied in millions, and the original tongues translated into every language. And though there had been churches ready to scatter them as the leaves of the tree of life for the healing of the nations, and missionaries to expound their soul-inspiring doctrines, all would have been unavailing to vast portions of the heathen world without the mariner's compass to guide the messenger of mercy across the trackless ocean.

Without the aid of the compass, the business of the merchant, and the work of the missionary, would be limited within the narrow bounds of a coasting voyage or a land journey. But when the set time had come that Christianity should be emancipated from the thraldom of the dark ages, when the moral Governor would give a new impulse to the world, and a new field for the conquest of the Church, this fact in nature was made known, and has resulted in discoveries which have already revolutionized the mental world, and which are destined to produce still more astonishing revelations in the physical and the moral. Who can calculate the effects

produced upon commerce and national intercourse? Or who can predicate the past or future influence of these again, as reacting upon the human family, in the development of civilization, freedom, self-government, philosophy, literature, and religion?

Had the discovery of the compass been sooner made, while war was the professional life of monarchs, nothing but human destruction could have ensued. Nations, slumbering in the security of their boundless sea-girt position, would have been daily overrun and destroyed by the barbarian invader. In the existing state of the apostatized Church during the dark ages, when pure Christianity was well nigh extinguished, and spiritual despotism had overlaid the precepts of the Gospel, the discovery of this invention could only have shaded in deeper gloom the dark folding clouds of heathen superstition. But in the purpose of God, the day of the Reformation was soon to dawn, the Bible to be emancipated, and reproduced in millions, for dispelling the mists of Popery; the policy of national isolation to be supplanted by the policy of national commerce, and, in prospect of these mighty moral changes, the God of providence evolved the secret of nature, and directed human ingenuity to the solution of the problem, that

the sea, as well as the land, might be made the thoroughfare of nations.

The intercourse of nations has extended knowledge, and, as a necessary consequence, has given rise to freedom, has renovated politics, has elicited the pent-up affections of man towards his fellow-man, and rendered war a stern necessity rather than a pleasure. It is true that the Millenium has not yet come, when "peace on earth, and good will to men," shall be the watchword of the nations. The trumpet of war has been blown, and the slumbering nations of Europe have been called to furbish their swords, and engage in the conflict. It is true that already many thousands of the mighty have fallen, and the cry of lamentation, under bereavement, has been re-echoed from the halls and hamlets of peaceful Britain. We admit that the dark thunder cloud is yet suspended, which may at some unexpected hour burst in a wide-spread European conflagration. But the conflict, as now waged between the Northern Czar and the Western Allies, is a struggle between grasping despotism and disinterested freedom. It is the result of human passions unsubdued—the ambition of conquest nourished in a despotic heart. But opposed to these stand out in bold relief, for the contemplation of future ages, the conferences, notes of diplomacy, protocols, and pro-

tests against war and Russian aggression, from the free and civilized nations of Europe. These are monuments of social progress, of respect for the rights of humanity, and the laws of nations; clearly indicating that the whole tendency of discovery in science, and progress in art is to aid in ushering in the reign of peace, and the re-establishment of the brotherhood of nations.

In this invention, then, we have distinct evidence of the hand of God in directing and overruling the efforts of human genius to subserve the purposes of grace and mercy; as these have been, and shall be fully exhibited in the redemption of our world. When the prophet Isaiah comforted the ancient Church with the announcement, "The glory of the Lord shall be revealed, and all flesh shall see it together," it must have been difficult for even him to understand how his own predictions should be accomplished. From the existing state of the art of navigation at that period, the intercourse of Israel with the world was comparatively limited. "The great and wide sea," known in modern times as the Mediterranean, formed the eastern boundary beyond which as a geographer, he could not penetrate. Of the distant continents, and the "isles afar off," and of the waste of waters that lay between, he had no knowledge, and how the "ends of the earth" could be reached, he could

not, as a philosopher, form any conception. But as a prophet, it was enough for him that "the mouth of the Lord had spoken it," he could gaze in the exercise of faith, and in the light of inspiration, down the stream of time, to the period when Divine Power, with or without the intervention of human means, should accomplish all that he had spoken. How different with those whose lot has been cast in these latter days? Not only has the Sun of Righteousness arisen over the nations, but all the instrumentality which Infinite Wisdom saw meet to employ in the diffusion of the Gospel, is being gradually developed. We see in progress the grand designs of the Divine economy as yet to be accomplished, and science and art in their appropriate sphere, and at the appointed time, lending their aid towards that consummation. Already may be seen the indications of that period when all the discoveries of science, and all the efforts of genius, shall be consecrated to the service of the King of Zion.

THE ART OF PRINTING.

This invention marks an important era in the world's history, and the time of its discovery is peculiarly illustrative of the over-ruling and directing providence of God. Like the mariner's compass, its primitive history is involved in

obscurity. The greater proportion of popular historians fix the date of invention in the early part of the fifteenth century, or about the year 1430—a period regarding which it may be justly said that darkness covered the earth, and gross darkness the people ; but of this period it may be also appropriately affirmed that the Spirit of God brooded over the gloomy chaos ; for it was, though a darkness that might be felt, the gloomy hour which preceded the dawn of light and liberty. Could it be by chance that a man of Haarlem, a town of Holland, named Laurentius or Lawrence Coster, should, while amusing himself in a wood, by cutting letters on the smooth bark of a tree, evolve the whole mystery of the art of printing ? In the transference of the letters to paper he only thought of amusing his children—as any other father would—but the Divine purposes was to illuminate a world by means of his discovery. This simple fact of transference from the bark of a tree to the unsullied sheet, of a few rudely engraved letters, gave rise within him to the discovery and application of a suitable ink. Thus, encouraged by his success, whole pages of letters upon blocks of wood soon gave to the world a power of diffusing knowledge hitherto unknown. We are aware that the honor of this invention has been claimed by other cities besides Haarlem.

Strasburg and Mentz have both contended for priority, and to other individuals besides Coster has the pen of the historian accorded this distinguished invention. The names of Fust, Schoeffer, and Gutenberg have each been respectively contended for, while recent researches have led some historians to date the discovery as early as the middle of the tenth century, and to accord the honor of the invention to the Chinese. It has also been supposed that the knowledge of the art was obtained from China, as there is some resemblance between their block-printing, and the most ancient specimens, or first efforts, in Europe. Be this as it may, and it cannot now be determined, the guiding providence of God, in respect to time, would only be transferred from the first elements of the discovery to its importation into Europe. Of two things we are certain, that between 1450 and 1455 the first great work was completed, and it is still more interesting to discover the fact that the earliest homage of this inestimable invention was paid to the "Word of Life." The Latin Bible "of six hundred and forty-one leaves, was the first volume printed with moveable metal types. Shortly after the discovery had been reduced to a systematic application, the printed Bible was offered in Paris for sixty crowns, but so deep was the moral darkness of the period that the

uniformity of the copies, and the numbers issued gave rise, not only to astonishment, but also to persecution. The vender of these copies of the sacred volume was supposed to be a magician, and, but for his timely flight, would have been executed for witchcraft.

What would the men of that generation think of the modern achievements of the printing press? Could they be resuscitated for a single day, and introduced to the manufactory of the London *Times*. And were they to occupy for a month the place and power of the British Cabinet, retaining their prejudices, little more would be heard of the "heart-rending scenes" of the Crimea, nor of the mismanagement of the war at home or abroad. How much better the state of things as they are, with a free and patriotic press, though slight inconveniences may arise to personal and political interests? The printing press as it now stands unfettered, and liberally supported by the British public may be justly viewed as the palladium of civil and religious liberty. Think of its mighty power and vast resources for the exposure of wrong, and the diffusion of intelligence! Let one example suffice, and it is taken from the establishment already named. The following statistics are mentioned in a report by Mr. Cowper, from which it appears that on the 7th

of May, 1850 the *Times* and "Supplement" contained 72 columns, or 17,500 lines, made up of upwards of a million pieces of type, of which matter about two-fifths were written, composed, and corrected after 7 o'clock in the evening. The "Supplement" was sent to press at 7.50 P.M., the first form of the paper at 4.15 A.M., and the second form at 4.45 A.M.; on this occasion 7000 papers were published before 6.15 A.M., 21,000 before 7.30 A.M., and 34,000 before 8.45 A.M., or in about four hours. The greatest number of copies ever printed in one day was 54,000, and the greatest quantity of printing in one day's publication was on 1st of March, 1848, when the paper used weighed seven tons, the weight usually required being four and a half tons. The surface to be printed every night, including the "Supplement," is 30 acres; the weight of the fount of type in constant use is seven tons; and 110 compositors, and 25 pressmen are constantly employed. This is but a single specimen of the productive powers of the printing press. What must be the accumulative power of all the printing presses in the world? How vast must be their influences for good or evil *now*, and assuredly for good *hereafter*? This power has been well described by one of our English poets* when he speaks of it as

* Rev. Robert Montgomery.

"That mighty lever that has moved the world—
The Press of England!
The magic of its might no tongue can tell;
Dark, deep, and silent oft, but ever felt:
Mix'd with the mind, and feeding with the food
Of thought, the moral being of the soul.
It could have half annihilated hell
And her great denizens by glorious sway."

It is not, however, upon the benefits of the printing press that we design to fix attention. These statistics have been introduced as an illustration of the influence wielded through this one invention, so that Divine wisdom and goodness may be more apparent as regards the *time* when it was bestowed. Had the discovery of the art of printing been earlier in Europe, its utility could not have been appreciated, nor could there have been found channels for the extension of its benefits. Indeed, there is reason to believe that it would have been sacrificed to the superstition and barbarism of the dark ages, or entirely lost among the rubbish of a lifeless and decaying literature. But the discovery was made at the very time, and associated with the very circumstances which were calculated to render its birth a blessing. The invention of printing was coeval with the revival of learning and literature among the European nations. It so far preceded the Reformation as to be fully matured, and sufficiently powerful to extend the knowledge of Bible truth, as well as to record

and perpetuate its triumphs. The long buried current of thought began to move amid the mental darkness, and to burst forth in the controversies of councils sacred and civil. The electric spark of truth was already shaking the ecclesiastical throne of error. Italy was animated by a fresh ardor, and the continent of Europe generally gave indication of an approaching crisis. The mighty deep was now subjected to the unrestrained use of the mariner, and vast continents were looming in the distance, soon to be discovered, inhabited, and illuminated by that light which was dawning on Europe. It was at such a time that the obscure German, heaven-directed, was revolving in his mind the first principles of the art of printing, and unconsciously introducing a mental revolution which has marked a new era in the history of the world. Could these circumstances, taken in connexion with the discovery, be the result of chance? To every reflecting mind there must be here the evidence of a guiding and over-ruling Providence.

The fact that the printing press should also be committed to Christian hands, and that the Bible should be the first permanent memorial of its new-born triumphs, is another evidence that it must be of God; and there seems also in the fact, that its first efforts were consecrated to the

service of Jehovah, an emblem of that blessed era when this, and every other mechanical invention, shall be received as a gift from "the Father of Lights," and willingly dedicated to his service.

In whatever aspect the printing press is viewed, there must be conviction that God is its primary Author. In its history, emerging from chaotic ignorance. In its application, the permanent defence of truth; in its extension, the harbinger of liberty; in its mighty influence upon the development of science and art—upon every physical, mental, and moral resource—upon every social and sacred interest—upon the well-being of the human family in time, and the preparation of man for eternity, there is a magnitude of purpose, and plan, and result, beyond the grasp of the human intellect, an elevation and a comprehension manifestly divine. The printing press, though evolved and employed by the ingenuity of man, possesses characteristics and relations to the Church and the world, which, calmly and intelligently considered, will necessarily lift the mind to Him who is the Governor among the nations, "who doeth according to His will in the army of heaven, and among the inhabitants of the earth," and who directs the mental powers and mechanical operations of men,

for promoting the progress and prosperity of that kingdom which shall never be moved.

THE STEAM ENGINE.

It has been well remarked that "steam and lightning are not secular, but Divine powers," and they have been well described as "inspirations from on high, preparing the way of the Lord." The steam engine, like the mariner's compass, existed in its elementary principles and powers from creation. The water, the fire, and the minerals had each a place and a form in the region of natural phenomena, though not yet arranged by human ingenuity so as to produce locomotive power. It can not be questioned that, in all ages, water could be converted into steam or vapor. It was thus transformed by a natural process in the first week of the world's history, when "there went up a mist from the earth and watered the whole face of the ground." Besides this elemental process, wherever artificial heat was applied, the same phenomenon was produced. In the most common culinary operations of domestic life, steam was necessarily generated by the contact of water and fire. In the gentle upheavings of the lid of the tea-kettle, the mechanical force of steam was daily exhibited. But how does it happen that the acutest minds among ancient philosophers never thought of the prac-

tical application of this mighty agent? How does it come to pass that, even after its power as a mechanical force has been discovered, and applied in the coal-mines of Cornwall, it could not be rendered available for general purposes until the days of James Watt? The only answer is, that the time appointed in the purpose and evolved in the mysterious providence of God, for solving the problem, had not come. Hitherto the world was unprepared for this inestimable boon. Had it been discovered prior to the invention of the mariner's compass, it would have been of comparatively little advantage; or had it preceded the art of printing, the ignorance of the human family would have precluded the possibility of enjoying the benefits which it was calculated to bestow. Nay, it may be questioned whether the introduction of steam at an earlier age would not have proved positively injurious—a curse rather than a blessing. Had the power of steam as a mechanical force been known to the ancients, whose professional life was war, how fearful must have been the carnage upon the peaceful shores of every sea-girt island? The ocean itself would have become the high battle-field of the nations! In the ages of barbarism, the power of steam would have been the instrument of universal devasta-

tion--the mechanical exterminator of the human race.

OBJECTION ANSWERED.

It may be objected to this line of argument, that we have not yet reached the reign of justice, nor attained to the enjoyment of universal peace. We admit the fact but deny the force of the objection. War is not *now* the stock in trade of national enterprise. It may, as at present, in the case of aggression by the Russian Autocrat, be rendered an act of stern necessity; but in all such cases, it is simply the administration of public justice—the infliction of merited punishment by the sword of the civil magistrate. In such circumstances, war, though an instrument of destruction, is nevertheless the visitation of avenging justice, protecting the weak against the oppression of the strong, and ultimately destined to break the scepter of every despot. But, it may here be urged, that art in such cases is perverted, and made instrumental for the destruction of human life; that the brightest genius is frequently expended in rendering more effective the life-destroying apparatus of war. We admit the fact; and in no preceding age has the progress of art been more manifest than in the present Crimean struggle. Witness our steam fleets, our guns, our railway from the harbor

to the camp, and our telegraph wires among the lines of our soldiery, conveying despatches from the commander-in-chief to the principal officers But let it be kept in view that, if war is rendered a necessity, a simple act of public justice because of national wrong, the more destructive the implements of war are the better, and the more efficiently it is conducted the sooner will its horrors terminate, and peace be restored.

But it may again be replied that this argument is like a two-edged sword which may cut either way. May not the agressor improve in Art as well as in War, and thus render his power more destructive, and extend the sphere of oppression? Is it not so in the modern history of Russia, with her improved guns, and forts, and infernal machines, which have hitherto kept in check our besieging army, and rendered the navigation of her dangerous coasts still more hazardous? This is true, and capable of universal extension, were there no counterbalancing influences in the arrangements of an all-wise Providence. But we have already seen, that the extension of knowledge, and the enjoyment of freedom, impart a mighty impulse to science and art; consequently, as knowledge is the basis of civil liberty, those nations enjoying the light of the Gospel will necessarily be found in advance of those despotic and enslaved. Thus, the pro-

gress of art, when applied to the implements of war, will ever be found in its most advanced state in connection with constitutional freedom. Has it not been so in the past history of Britain? Is it not so in the present conflict? The superiority of the Allies in shipping, in the material of war, associated with fidelity, discipline and moral courage, have already been fully established before the walls of the Crimean Strong-hold, and are our only hope under God of victory over vastly superior numbers, and of ultimately dictating the terms of an honorable peace which will secure and re-animate the liberties of Europe.

Besides, in the present development of martial prowess, the Allies, and especially Britain, have been placed in a position of great disadvantage. The secret purposes of the Russian Czar have been maturing plans offensive, and defensive, for many years—while Britain was slumbering upon her oars, and occupied with extending and regulating her commercial relations with the world, rather than projecting aggressive schemes of aggrandizement, or training her sons in the science of war. Even while her gates were freely opened to strangers from every kingdom, and while her Crystal Palace was exhibiting the productions of the industrial arts from every clime, as the first instalment of universal brotherhood

restored, Russia was forging her implements and training her armies for the re-establishment of a European despotism. Yet, in the day of battle, the highest development of science, art, and invincible courage is found upon the side of the Western Allies, clearly establishing the fact that mechanical progress will ever be in advance upon the side of civilization and freedom, until the banner of Peace shall float triumphant in every land, and the "good will" of the Gospel be embodied in works of universal philanthropy.

And, is it not manifest, that in the over-ruling providence of God, a peace of forty years has been accorded to Britain, in order to prepare her for this eventful struggle! Though that preparation has not been direct, nor with a view to the display of martial prowess, it has been progressing securely in her vast acquisition of wealth and in the unprecedented development of her arts and sciences. Inexperience, she may be charged with, in her earlier campaigns, but what are these compared with the forty years of peace and prosperity, during which inventions have come to light, and intellectual and moral influences have been at work, which in harmony with the dissemination of the Gospel, will at length issue in the peace of the Millenium. It is worthy of observation, that the discovery of the Steam Engine was given at the very period,

best adapted for its development—even during this unparalleled period of peace. In the early part of last century, many efforts were made to render steam available for general purposes, but none succeeded until Watt, after years of study and experimenting, was commissioned to solve the problem. The latter half of the eighteenth century was a time of experimenting. The first half of the present century has been the period of application. While the continental wars were drawing to a close, the inventor of the steam engine was unconsciously preparing Britain for the present conflict, and no less than forty years of peace were given to test its utility, and develop its mighty influence upon the whole range of mechanical arts! Is it possible to view these facts—the relation of the invention to time, and the circumstances of human history, without the conviction that the wisdom of God has fixed the one and that His almighty power has evolved the other?

This peculiar relation of *time* and *discovery* is equally apparent in connexion with the extension of national intercouse. The discovery of America, Australia, and other distant regions of the unknown world, by the aid of the mariner's compass, prepared the way for the most enlarged application of steam. Had this mighty engine of locomotion been in use previous to the dis-

covery of the great western continent, what would have been the natural result? Is it not evident that had the population of the European world been poured into this newly discovered country in millions as they have recently been by the agency of steam, the organization of the social fabric would have been utterly impossible. Provision for the wants of emigrants arriving in weekly thousands in a new country, where all was unsubdued, could not have been realized without a miracle, such as sustained the Israelites in the desert. The misery of the primary mining huts of California, or the sufferings of the first settlers in "Canvass Town" at Melbourne, or even the recent state of the hospitals of Balaclava, would furnish but a faint picture of what must have been the state of American society, had its discovery been co-evil with the present use of steam, or had its desert waters been peopled by the million, as in modern times. But no anomaly of this description occurs in the dispensations of Providence. He who taught the crane and the swallow the time of their coming, has also arranged the entire chain of events, so that none shall fall out before its appointed period, nor shall the discoveries of man, or the policy of nations, derange the benevolent schemes of the moral Governor. To sail for Columbia, under the former mode of navigation, was the

thought of years, and the actual enterprise of many months. Thus was emigration restrained within moderate limits, until the land of adoption was prepared to receive and sustain its imported population. Nor was this restraint less important to the mother country, which would otherwise have been left destitute of her native population, before she had become sufficiently commercial to command the trade of the civilized world. By comparatively slow, but steady progress, both countries were prepared for emigration upon a gigantic scale. In the new world, the vast and trackless forests yielded to the industry of man. Cities rose in majesty and splendor. Civil constitutions were framed. Churches were organized and schools established. And thus, the land which had been so long beyond the ken of the Eastern kingdoms, was prepared for the most extensive operations of steam and commerce. At home there is a corresponding preparation, though of an entirely different description. Forests of shipping are found accumulating in British ports. Manufactories are being established on every hand. Inventions and discoveries, are daily transferring labor from human hands to machinery, and thus, the over-crowded and over-taxed operatives, and peasants of Britain are set free, to find a home and a land of independence beyond the

waves of the vast Atlantic. To pursue the argument in all its aspects would be endless, nor is this necessary, as every reflecting mind must be convinced that these arrangements of time and circumstances are not the result of chance, but the manifestations of Divine wisdom, and power, and goodness.

THE SPINNING MILL.

What is true of the invention of the steam engine, in respect to *time*, is equally true of the spinning mill and the power loom, as regards their rapidity of production. Had not the invention of the steam engine preceded both, neither could have existed without injury to society. Of what *utility* could the spinning mill have been without the discovery of America, by the help of the compass, and the transit of raw material, and manufactured goods by the aid of steam? It would have reduced the value of human labor in Britain, while there was not yet furnished a new country for its rapidly increasing population. It would have arrested employment, and shut up the channels of sustenance, ere yet the fertile plains and boundless resources of the Trans-Atlantic world had been laid open. Nor is this all the evil which would have followed the inversion of these discoveries. Had not the intercourse of nations been pre-

viously established, there could have been no market for our manufactured goods, nor supplies of provision for our working population. Besides, had the invention of the spinning mill and power loom preceded the use of steam, all our manufactories must have been established on the banks of this, or that rural stream, and, consequently, instead of our seaports becoming the marts of merchandise, existing towns would have sunk in decay. Rural villages might have risen in the mountain recess around the busy factory, but our modern cities, adorned by the residences of our merchant princes, could have had no existence. The carriage inland would have at once reduced the profits, and retarded the progress, while the want of a proper relation between the powers of production, and the channels of consumption, would have deranged the harmonizing influences of the social structure, and have produced revolution and ruin to the body politic. But that Infinite Wisdom which compounded the elements of water so as to produce steam in given circumstances—that Almighty Power which deposited the beds of coal and iron—that boundless Beneficence which embraced man in all his relations and necessities, so arranged the varied revolutions of the wheels of Providence that each discovery should turn

up at the appropriate period, and that all united should glorify their Divine Author.

THE POWER LOOM.

To refer but once more to the successive development of inventions, the wisdom and goodness of God are manifest in the spinning mill taking precedence of the power loom. Without the former, the latter would have been utterly unnecessary. The spinning mill, producing yarn from the raw material with such velocity, without the power loom to convert it with equal rapidity into the destined fabrics, would not only have disturbed the balance of labor, but have entirely failed to accomplish the designs, which both united, are destined to effect. Destitute of either, or of both, at the present time, our country could not compete with other countries where labor is cheap, nor take the lead, as it now does, in the foreign marts of merchandise.

It is freely admitted that, in the transition from the distaff, or the matron's domestic wheel, to the merchant prince's spinning mill, privation, suffering, and disappointment must be borne, by interested parties. And in passing from the hand to the power loom, personal disadvantages may be experienced. So apparent was this fact, and so keenly were the sympathies and

selfishness of men enlisted, that Arkwright, with his spinning mill, was driven by riotous opposition from Preston to Nottingham; while even later in the progress of invention, Cartwright's factory with 500 looms was maliciously and wilfully burnt to the ground. But as well might man attempt to close the gates of the East, to prevent the rising of the sun of nature, as to turn back or restrain the heavenly imparted movements of the wheels of Providence. The persecution of an inventor of machinery has only the sooner attracted men to the consideration of its importance, just as the persecution of the witnesses for truth extended and established their living testimony. Taking his stand point on self-interest, and embracing within the compass of his vision, his isolated importance, man will persecute his fellow if supposed to cross his path. But, on the other hand, let the glory of God be the centre principle of action, men, and all that pertains to their personal or relative interests, will be viewed in their relations to the moral government of God. And thus it will be manifest, that, while one portion, and that a small minority in the great family, is suffering reverses, another portion of the human race is reaping the benefit of the change introduced by the invention of machinery. What is the ultimate object in converting the raw material into

mechanical fabrics ? Not assuredly the aggrandizement of the Western planter ; neither is it for the acquisition of wealth to the enterprizing spinner ; nor is it simply for the distribution of wages to the operative classes. The clothing and the comfort of the human family is the design of God, who provided the material, the machinery, and the skill of the manufacturer. He who made coats of skins, and clothed our first parents on leaving Paradise, has, by a variety of substances and instrumentality, furnished the wardrobes of their erring descendants. Consequently, all should rejoice together in the extension of the productive powers, of machinery, as keeping pace with the increasing necessities of the human family, so that the agriculturist, the merchant, the artizan, and the laborer, may each be enabled to say in the spirit of gratitude, "Every good gift, and every perfect gift is from above, and cometh down from the Father of Lights, with whom there is no variableness, neither shadow of turning."

THE RAILWAY AND ELECTRIC TELEGRAPH.

These are taken in conjunction, because, though there is a difference of time in their invention, they are to be viewed rather as different departments in one complicated mechanism. If the spinning mill and power-loom were the

great commercial phenomenon of the first quarter of the nineteenth century, the railway and electric telegraph unquestionably occupy the same position in the second. Nothing of a merely mechanical kind, in modern times, has produced such vast changes, or been followed by so many beneficial results. Of all human inventions—the alphabet, the manufacture of paper, and the printing press excepted—those inventions which abridge distance have done most for the civilization of our species. It has been remarked by an acute observer of historical changes* that "every improvement in the means of locomotion benefits mankind morally and intellectually, as well as materially, and not only facilitates the interchange of the various productions of nature and art, but tends to remove national and provincial antipathies, and to bind together all the branches of the great human family." By way of illustration it is added, "In the seventeenth century the inhabitants of London were, for almost every practical purpose, further from Reading than they are now from Edinburgh, and farther from Edinburgh than they are now from Vienna." If it is thus with respect to the rapid locomotive transference of persons or traffic from one city, or country to another, what shall be said of the conveyance of thought upon the wings of the

* Macaulay.

lightning, from friend to friend in places far remote? Is there not here what may be justly termed the *mental department of the railway agency?* Modern astronomy, through the aid of the telescope, has disclosed the gloomy belts of Jupiter and the silvery rings of Saturn. These are glorious discoveries for the philosopher—giving rise to most interesting speculations and conjectures, without producing much practical result to the human family as a whole, or altering in the slightest degree the relations of space. But the discovery of the materials, and the construction by human skill, of iron belts across the continents and islands of the earth; and, in connexion with this, the circulation and direction of currents of thought, by the electric wires, from shore to shore—imbedded in the soil, suspended in the air, or submerged in the sea—are not only marvels of science to astonish the learned, but also ministers of physical and mental elevation to the human race. The earth itself is becoming a vast machine; not only wheeling its inhabitants through infinite space, but encircled with a mechanical framework, it is bearing to and fro, upon iron rings, its living millions, while its electric net work of wire arteries is incessantly throbbing with the quick pulsations of human thoughts.

It is but recently since the first locomotive engines breathed the breath of defiance, and soun-

ded the shrill notes of absolute triumph upon an English railway; and yet the generation which was startled by the prospective announcement of these probable futurities, has lived to see the face of the country and the aspect of society completely changed by their agency. Though feeble attempts were made in the direction of railway discovery in the beginning of the present century, from 1841 to 1850 may be termed the period of locomotive progress. During these ten years, 841 parliamentary Acts were passed for the construction of railways in Great Britain and Ireland, to the extent of 10,705 miles. At the close of 1850, notwithstanding the number which were abandoned when the 'mania' subsided, 6621 miles had been opened for public traffic. The passengers conveyed during this year were 66,840,175, who paid fares amounting to the enormous sum of £6,465,575. Add to these the railways of the continent and of America, how vast the exertion, and how mighty must be the influence of this invention upon these countries, and upon the world? Still more rapid and more wonderful has been the development of the telegraph. Mechanical telegraphs on a small scale and for special purposes on sea and land preceded the invention of the railway, but the *electric mechanical telegraph* is of very modern construction. In 1837 the first of these was

patented by Messrs. Cooke & Wheatstone,* and laid down upon the London and Blackwall Railway. Year after year patented some new improvement, and *line* after *line* began to breathe through this channel of communication. The close of the year 1849 found in Britain, Prussia and the United States of America, no less than 14,000 miles of suspended or insulated wire, transmitting with lightning speed, the thoughts of men separated by the breadth of a continent or the length of an island. But 1855 can boast of still mightier triumphs! The depths of the sea have been traversed by the magic conductor. France can converse with England, and Scotland with Ireland, more quickly than two friends at opposite sides of a spacious street, could meet and give each other a morning salutation! Nor is this all. The daily news of a distant campaign can be transmitted from capital to capital of kingdoms far remote in space, though united in purpose and policy. Nay farther, while we write, the Mediterranean Electric Company is on the point of dispatching their cable, which is shortly to complete the telegraphic communication between London and Algiers. Last year 110 miles of cable were sent out from England and laid down between Spezzia and the most northern point of Corsica. The communication is now completed

* Knight's Cyclopedia.

from London to Cagliari, in the south of Sardinia and the line from Algiers to Cape Borran, on the African coast, was opened last January, so that nothing is now required to complete the work but a submarine cable from Cape Spartivento, adjoining Cagliari to Borran, which is at present prepared and coiled in the hold of the ship, Result. This cable is 150 miles long and weighs 1200 tons. The most astounding announcement remains—"The company anticipates that in two years and a half it will have a direct communication with Bombay, and from thence by telegraphs, already at work in the Presidencies, to Calcutta." Is not a similar announcement looming in the distance as regards the American continent, and the still more distant region of Australia? These latter achievements once realized, the earth is subdued to human intercourse, and the heaven-directed intellect, which has obtained the victory over wind and tide, shall start afresh on higher and more mysterious discoveries, and appropriation of the elements of nature, created and preserved for the benefit of man. Even *now* "many are running to and fro" —*then* "shall knowledge be so increased" that the world shall be scientifically as well as spiritually illuminated.

It is unnecessary to draw any contrast between the modes of traveling in ancient and modern

times. The present generation have not yet forgotten the tedious wintry days, and dreary nights, of the swiftest coaches—inventions which, in their day contrasted with the pack-horse, or the lumbering wagon, as our railway carriages now do, with the best appointed mail in the coaching system. Nor is it to our purpose to place in opposition the foot runner of the seventeenth century, and the Electric Telegraph of our own day. To every reflecting mind the changes are astonishing, while to every philanthropist, the influences resulting from these changes must give rise to the most enlarged expectations of future progress, and universal advantage. In the mean time, we desire to contemplate the providential aspects of these inventions, as regards the time of their discovery, and their relations to each other, or to previously existing machinery.

Had railways been sooner constructed in Britain, ordinary roads, such as are now in general use, could never have been formed. It was absolutely necessary, for the progress of the country, as a whole, and for the development of its vast resources, that good roads should be constructed through every agricultural and mineral district. Had Railway Acts preceded Turnpike Acts in British legislation, future generations might have been for ages struggling through the mire of ancient bye-paths, and ford-

ing the rivers as our ancestors did in the seventeenth century. Of this period it is said by a living historian,* that even the "highways appear to have been far worse than might have been expected from the degree of wealth and civilization which the nation had even then attained. On the best lines of communication the ruts were deep, the descents precipitous, and the way often such as it was scarcely possible to distinguish, in the dusk, from unenclosed heath and fen, which lay on both sides. . . . . It was only in fine weather that the whole breadth of the road was available for wheeled vehicles. Often the mud lay deep on the right and left; and only a narrow track of firm ground rose above the quagmire." Still heavier calamities at times awaited the traveller, when his way was completely intercepted by the rising flood, or cut short by the armed highwayman. To prepare for railways, or to enjoy their benefit, it was necessary that the nation should struggle through the operation of making roads and building bridges, and, indeed, in a mechanical point of view, both were necessary to the rapid construction of modern railways. The arts of excavating, embanking, and bridging, evolved in the formation of the common roads, prepared the modern engineer for the execution of gigantic

* Macaulay.

works in the construction of railways, and thus, while the apprenticeship of construction was in progress, the country became intersected with roads, at once accommodating the public, and furnishing channels of transit for the railway traffic. Though the iron roads of modern times may intersect a country, stations can only be placed at considerable distances, otherwise the speed is retarded by frequent stoppages, and the expense increased by railway officials, consequently, common roads will still be required, both in the city and the rural districts, not only as channels of local intercourse, but also as feeders for the railway's gigantic commerce. With these the country was gradually furnished during an age of peace and prosperity, and the best leading roads of both kingdoms have been so far redeemed, that a moderate expenditure will maintain them in permanent repair. Could funds have been raised for the construction of these since the Railway mania? Verily not! consequently it is evident that an All-wise Providence was overruling and directing the policy of man, so as to accomplish the results which, in combination and harmony, astonish the world. Individual and local sufferers there may, and must be, in any of these radical changes which affect and benefit the masses, but the good of the whole is the purpose of the moral Governor, and all individ-

ual and local disappointment ought to be considered as checks upon selfishness, and lessons in philanthropy.

OBJECTION.

It may be objected that the argument is only local, and cannot be legitimately adduced in support of a general fact or principle. It may be said, "Is not America an exception to this rule of priority? Are not railways in many of the Western States, passing through the dense forests and prairie plains, where no trace of human labor has been found in the formation of roads?" This fact is at once admitted, though the reasoning founded upon it is no refutation of our argument. America, unlike the Isle of Britain, has its frosty winter of many months, during which the traveller skims the snowy wreath with his sledge, upon the icy tramway, or crosses at pleasure, regardless of ford or bridge, the majestic ice-bound river with his lumbering waggon. Nor are the summer months an exception to the ease and freedom of transit. By the intense heat of the sun's rays, the ruts and pools of the unformed road vanish, and even the moisture of the fen and swamp are so absorbed, that the traveller may pursue his journey at pleasure, or convey his merchandise to the city, the steamboat, or

the railway. In consequence of the climate, and geological formation of Britain, such modes of transit could never have been realized. To its present greatness common roads are absolutely necessary, as well as railways, and we cannot too much appreciate the Divine display of wisdom and goodness, in giving us both, in the relation of time in which they have been introduced.

COMMERCE AND RAILWAYS.

The relations of time are peculiarly striking, as regards the development of commerce, and the accumulation of wealth, so far preceding the construction of railways. The antecedent development of the cotton trade, by machinery, rendered necessary such modes of transit as are now employed. While the domestic wheel, or even the spinning *jenny*, were preparing the raw material for the hand-looms, intelligence *travelling* for weeks, or goods for months, before reaching their destination, was felt to be no inconvenience in regard to time. But when the spinning mill came to devour the cotton by the bale, and the power loom to suck up its twisted fibres with insatiable appetite—pouring forth its ever-varying fabrics by the million—it became a mercantile necessity that the steamboat should plough the briny waves to distant regions, with somewhat of

mechanical precision, and that railways should transfer her freights on land, to the manufactory or the warehouse with corresponding velocity. At the close of the seventeenth century, the whole annual import of cotton to Manchester did not amount to two millions of pounds, a quantity, which would now hardly supply the demand of forty-eight hours.* Such a change, in the powers of production, must either be succeeded by corresponding changes in the means of transference, or be absolutely checked and retarded. But progress and not retrogression, is the natural principle embodied in the history of the arts and sciences; consequently, the relations of steam and manufacture are established and regulated by inherent influences, communicated and directed by an all-wise Providence.

In the constitution of the human system, mind takes precedence of matter in mechanical action. So also, in the development of the arts of industry, in connexion with commerce, it was necessary that there should be discovered methods of conveying intelligence, more rapid than the transit of goods by the steamship or the railway, and hence, in the providence of God, at the appointed time, the Electric Telegraph astonished the world. The rapidity of conversion from the raw material to the finished

* Macaulay's History.

fabric, required intelligence regarding the state of distant markets; otherwise the importer might be ruined by an unprofitable speculation. The improved postage supplied the channels of intelligence sufficiently early, until outstripped, by the railway or steamboat, conveying the goods as quickly as the intelligence regarding them. Then, and not till then, did the telegraph take its place in the temple of discovery, inconceivably distancing all former speed, annihilating space, and placing side by side in commercial and political intelligence, the marts and manufactories of national merchandise. Is there not wisdom in such mysterious arrangements, beyond the most enlarged comprehension of human sagacity? The electricity still existed, and was not unfrequently soliciting attention by its destructive power in the bursting thunderbolt, but man obtained not the key to its hidden storehouse, nor the skill to restrain or direct its current, until the world was prepared to employ its agency and appreciate its benefits. As in the processes of nature, there is no waste in the proportionate adjustments of cause and effect, so also in Providence the demand and supply are mysteriously regulated, so that each invention, though distant and separate, is fitted into its appropriate place at a given time, and is found not only to be self-adjusting in its local position,

but also a joint regulator of the movements of all with which it is co-existing. Besides, it possesses a latent power which sooner or later will defy legislation, dispel the clouds of prejudice, and work out the designs and purposes of the universal Benefactor.

RELATION OF CAPITAL TO RAILWAY DEVELOPMENT.

The commercial prosperity of Britain was absolutely necessary to the present development of the railway system. The precedence of Britain in manufacture has concentrated wealth, and furnished opportunities of investing capital and employing labor, which have given our country a mercantile superiority in the marts of merchandise at home and abroad. Capital profitably invested, and labor judiciously directed, lay the foundation of national wealth and social prosperity. National wealth, acquired by national industry, and invested with commercial intelligence, must necessarily encourage, and will liberally furnish the means of mechanical improvement. Thus, the national wealth rapidly accumulated by the manufactures of the first quarter of the present century, enabled the second quarter to develope its railway system, and to bear the shock of its temporary railway crisis. At no former period could so much cap-

ital have been withdrawn from existing commerce and manufacture, and turned into an entirely new channel, without destruction to the general trade of the country; nor could such commercial and agricultural distress have been endured previously without ruin to the social fabric. Even when Chartism was at its height, and the country, distracted by commercial distress, accompanied by famine, the relative interests of the various classes drew closer the bonds of union, while the capital at stake, and the constitutional liberty enjoyed, elicited such a demonstration of loyalty to the throne that in one day the lowering cloud of insurrection was dispelled from the city of London, and the sophistical bond of the democratic charter for ever dissolved. At this very period, the construction of railways lessened at once the misery and the social danger, by giving employment to those very parties who were nearést the point of starvation, and most likely to be roused in physical force demonstrations. By being scattered over Britain, their power was diminished, and their local ranks thinned, so that by the time the Railways had been completed, they were transferred beyond the Atlantic by emigration, or absorbed in the social community. Is there nothing in all this, but fortuitous coincidences falling out at random? They must be

blind indeed, and verily ungrateful, who do not see and adore that God who is the "moral Governor among the nations."

MINERAL RELATIONS TO THE CONSTRUCTION AND WORKING OF RAILWAYS.

The relation between the railway system and the sources from which all its machinery are constructed and sustained in operation, furnishes another convincing argument that the time of its development was the most appropriate, and such a time as infinite wisdom alone could determine. Iron and Coal are essential elements, and relatively considered, occupy a chief place in the formation and constant working of railways. The procuring of these in sufficient quantity, draws most heavily on human skill and labor. In reviewing the political and scientific history of our country, we are convinced that, at no earlier period could railways, as now established, have been constructed or employed. Coal fields existed in abundance, but hitherto mining had not attained that perfection which was necessary to meet the increasing demand of modern times ; neither had the stationary engine at the pit's mouth become auxiliary to the locomotive on the rail. Iron was also deposited in exhaustless stores, but the quantity requisite had not been obtained ; neither had the machi-

nery destined to roll out its bars, in adaptation to the dimensions of the rail, any place among mechanical inventions. As late as the second half of the seventeenth century, a great proportion of the iron used in this country was imported from abroad ; and the whole quantity cast here annually, seems not to have exceeded ten thousand tons. At present, the trade is presumed to be unprosperous, if less than a million of tons are produced in a year. These comparative statistics show a close relation between the mineral dug out and railway development. Until the mists of prejudice were dispelled, by the extension of practical knowledge, and until legislation was guided by more enlarged conceptions of our national resources ; many of the most important branches of industry were positively discouraged. It was thus with the iron trade of Britain. Even in the reign of Elizabeth, fears became general regarding the consumption of wood, and complaints were made of whole forests being cut down, for the purpose of feeding the iron furnaces—coals not then being used for melting the ore. This led to injudicious legislation, and Parliament passed an act prohibiting the iron masters of that age from burning timber. This caused the trade to languish for a considerable time, though it doubtless tended to stimulate, at a later period, the mining for coals. It

is clear to a demonstration that, in such a state of mining as then existed, it would have been utterly impossible, by any expenditure of wealth, to have procured the requisite iron, or to have kept the engines in motion by a sufficient quantity of coal. In the last year of the reign of Charles the Second, it was the boast of the 'Londoners,' that two hundred and eighty thousand chaldrons, that is to say, about three hundred and fifty thousand tons were brought to the Thames. At present nearly three millions and a half of tons are consumed yearly, by the metropolis alone ; and the whole annual produce cannot, on the most moderate calculation, be estimated at less than thirty-five millions of tons.* It is evident, then, that railways were invented and have been brought into general use, as early as the state of commerce required their aid, and as soon as the state of mining admitted of their construction, and continuous operation. Leading inventions may be retarded, by short-sighted legislation, but evolved in their natural order of time, each becomes auxiliary to the general development of mechanical phenomena, and all unite in benefiting the human species.

It is not less remarkable, in respect of time, that Gutta Percha was discovered at the very period when philosophers and mechanics had felt

* Knight's Cyclopediæ.

the absolute need of some non-conducting substance, in which to encase the electric wires for submersion in the mighty deep? Being the gum of the percha tree which grows, and which has probably grown from time immemorial in Singapore, Borneo, and various other Eastern Islands, is it not amazing that a substance so easily procured by tapping the bark, should never have been known in England until the year 1843, when Dr. Montgomerie presented a specimen to the Society of Arts in London. It has now become a regular article of commerce, being used in the preparation of innumerable articles, from the sole of a shoe, to the official seal attached to patents, and other similar documents issued by state officials, besides ornamental work of all descriptions. But the insulating power of gutta percha, as a non-conductor, and shield for the submarine telegraph, is evidently its primary purpose as yet known, and it is the only substance yet discovered that could supply the want formerly experienced in every attempt at submersion of the wires. Has not this tree been created, preserved, and shown to man, by the God of providence, as certainly as the renovating tree was shown to Moses, at the wells of Marah, by the God of grace and salvation.

It is unnecessary to pursue this branch of the argument, by adducing historical illustrations in

respect to the state of society, as related to, and in connexion with other inventions. The argument as presented may be carried through the entire region of mechanical phenomena. It has been shown that the elements are all of God, that they have been preserved from age to age, by almighty power, and that all the circumstances have been arranged for their development, at the time best adapted to the existing state of the human family. Though in regard to the early history of some inventions, they might seem as if discovered before the time. But what has been the result of this precocity? Such have fallen still-born upon the world. Men have not discovered their utility, or there was the want of some corresponding element in the material, or some impelling influence in the commercial world, and they consequently wasted away. But these efforts of genius, though failures, were the signal tokens of future triumphs. The same materials, placed in other hands, modified or proportioned by other ideas, and surrounded by other circumstances, at once astonish and enrich the nations. Apparently broken links there may be, in the providential chain of scientific discovery, and mechanical invention, but the time will come when in its full suspension in the sight of a renovated world, each end will be seen as attached to the throne of the moral Governor, and every

link in the place which infinite wisdom has assigned it, and into which it has been fitted by almighty power. Is there not enough, even now, in the progressive development of machinery, to convince the most sceptical rejector of an overruling providence, that God *is there* in its first elements of thought—its embodiment in material form, and its ultimate results upon the physical, intellectual, and moral condition of the world. True it is, in the region of artificial phenomena as well as of that which is natural.

"The Globe knoweth not increase, either of matter or of spirit.
Atoms and thoughts are used again, mixing in varied combinations;
And though by moulding them anew thou makest them thine own,
Yet have they served thousands, and all their merit is of God."

CHAPTER III.

THE TENDENCY OF INVENTIONS, A PROOF THAT THEY ARE OF GOD.

FEW will be disposed to deny that this world, in its minute, as well as its comprehensive providential arrangements, bears unequivocal testimony to the benevolent designs of the Creator. It is impossible to contemplate the constituent elements of which it is composed, without the conviction that they were primarily selected and deposited in accordance with the anticipated wants of the human family. In every aspect there appears adaptation to the physical and mental constitution of man, whether considered in his original state, or fallen and depraved condition. As a holy and happy being, he had few physical wants; but such as he experienced, were amply supplied in that world over which he obtained dominion. As a spiritual being, made in the Divine image, he enjoyed complete felicity in communion with God. To him, as lord of creation, all nature tendered a physical service; but yet a service only rendered in

obedience to the dictates of his mental being, and actually elicited through the operation of his own physical organization. Nor was this a constitutional necessity only, it was the law of his materio-mental being, corresponding to the law judicially announced, and to the charter of privilege munificently granted when Adam was commanded to "be fruitful, and multiply, and replenish the earth, *and subdue it*, and have dominion over the fish of the sea, and over the fowls of the air, and over every living thing that moveth upon the earth." *Subdue the earth* was the primary command, and the claim of "dominion over it" seems to rest upon obedience to this injunction. Until the human family has multiplied so as to replenish the earth, that subjection cannot be obtained, nor that universal dominion established. Those physical and moral revolutions which have resulted from the introduction of sin, do not make void the primary commission, nor cancel its obligations. *Subdue the earth* was the mandate issued to Noah amidst the desolations disclosed by the receding deluge, as well as to Adam surrounded with the luxuriant productions of Paradise. *Subdue the earth and have dominion over it* is the Divine mandate addressed to their posterity as much as to those progenitors of the human race; and until the work is accomplished, the

obligation must remain immutable. It is true that human capabilities, mental and physical, were impaired by the shock of moral evil, and even the world itself was convulsed by the thunder-bolt of Divine wrath, drawn down by the electric wire of human guilt; but no such changes, whether physical or moral, could alter the divine decree, rescind the original law, nor release humanity from primary obligations. With a darker intellect and a weaker constitution—with consequent liability to exhausting fatigue and frequent disappointment—with a blighted world and rebellious subjects—man must, from age to age, pursue his laborious course until the original purposes of his Creator regarding earth, are all accomplished. In the beneficence of God every effort is accompanied by a present benefit, while each succeeding discovery is not only a stimulus to future exertion, but also a re-echo of the voice of the original proprietor as saying to the sons of men "subdue the earth and have dominion over it."

Let it not be supposed that the violation of the Divine law embodied in the covenant of works could abrogate or disannul those injunctions which had respect to man's duty in regard to temporal things. Though man became a rebel, he cannot frustrate the purpose of an all-wise God. The earth was made

a habitation for man, and sooner or later shall it be inherited by the sons of men. Though as a person, man, the moral agent, must be punished for the transgression of the Divine law, yet man as an instrument shall be constrained to accomplish the divine purposes. So comprehensive are the plans of infinite wisdom, that reluctantly or willingly the eternal decree shall be carried into execution. The very fact which separated man from his Creator—the fall by transgression—has been the occasion of revealing, not only the mystery of redemption, but also the mysterious economy of Providence. The latter is subservient to the former, but both in harmony reveal the glory of God. In both there is full scope for the free agency of man, the person, while there is also retained absolute sovereignty over the actions of man, the instrument. His motives, and efforts, and ends may be selfish and rebellious ; but yet, in the moral government of God, they are so over-ruled, restrained, and directed, that they ultimately accomplish the Divine purpose. This is peculiarly illustrated in the history of Adam's fall. In that sentence of condemnation which was pronounced in Paradise by offended Deity, the primary law of labor in respect to man, and the original purpose of God to subdue the earth through his instrumentality, are beautifully intertwined.

"Cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; thorns and thistles shall it bring forth unto thee, and thou shalt eat the herb of the field. In the sweat of thy face shalt thou eat bread till thou return unto the ground; for out of it was thou taken; for dust thou art, and unto dust shalt thou return." In this sentence there is no repeal of the existing law—no absolution from primary obligation. The purpose of God regarding the earth, and regarding man its occupant, is unchanged. But the relations of man to his Creator, and all the circumstances in which he is destined to accomplish the divine purposes, are completely altered. There is universal schism in the natural and the moral world. The heart of man is alienated from God; his will is opposed to the Divine will, nevertheless as an instrument he must fulfil his destiny. Exercising a delegated dominion over the earth, the active duties involved in subduing it were accompanied with sensations of unalloyed pleasure; but having, by transgression, forfeited that dominion, fallen man is constrained by necessity to labor as a slave, while the pleasure of labor is embittered by its penal characteristics. Irrespective of this, the work originally indicated must be accomplished. Man must retain his place as the agent by which it shall

be effected. But in the mysterious providence of God, the work of subduing the earth is so planned that each succeeding generation may be amply occupied, and also realize increasing benefits in proportion to the progress made, while the united efforts of all are requisite to carry it forward to final consummation. As the various workmen in the erection of a building individually and unitedly contribute towards the completion of the plan designed by the architect, so the human family is gradually filling up the comprehensive plans of Providence regarding the world.

Viewed in this aspect, there appears a close connexion between man's nature and his duty as a creature. Destined for occupation, his wants furnish a permanent motive where his moral obedience fails to constrain him to duty. In the appointment of heaven the increase of his wants by the fall counterbalances the reluctance of his rebellious spirit, so that he renders as an instrument that obedience which, as a moral agent he declines to yield. The natural activity of his constitution, though benumbed by the chilling effects of sin, is stimulated by stern necessity to work out the doings of God regarding the earth as his temporary habitation. Work or want is the bye-law of actual administration, which even savage life cannot disregard,

and which the highest state of refinement cannot utterly repeal. All must earn their bread by the sweat of their brow, or the exercise of the brain within it. From the very constitution of things both are brought into requisition in every department of human occupation. From the sovereign to the humblest subject there is labor in procuring supply for official, relative, or personal wants. If the hands are freed from grinding toil, the mind will be taxed with exhausting activity; and even where both seem to be emancipated by the possession of riches, the cares of preservation, of distribution, of modes of increase, are found as harassing to the possessor, as if both head and hands were employed in daily labor. Thus it is found in universal experience, that "All things are full of labor; man cannot utter it; the eye is not satisfied with seeing, nor the ear with hearing."

In beholding the toiling multitude, we may be ready to inquire, Whence the necessity for this incessant labor? Is it simply by way of punishment that God has doomed the fallen race to work that life may be preserved, and yet in the excess of work demanded, and sometimes in its very nature, that life is being wasted by continuous exhaustion? This might seem at first sight the reason, and as announced in the sentence passed upon Adam, it is no doubt presented

as an element in the penalty. Indeed the toils of human life have been adduced as an argument that man is fallen. But when considered in relation to the comprehensive plans of the moral government, labor appears in the aspect of a blessing. It is at once a check upon human depravity—a preventive of crime, and the source of social comfort ; while at the same time affording a wider range for the operation of relative affections. The fall of man did not introduce but only increased and aggravated human labor. The primary law was announced ere yet the bloom of Paradise had been blighted by sin. "The Lord God took the man and put him into the garden of Eden *to dress it and to keep it.*" That garden was planted by the Divine hand, with every tree and herb good for food, and pleasant to the eye ; but though divinely planted in fructiferous maturity, they were committed to the care of our first father "to dress and keep." It is also evident, from the primary law of the Sabbath, that our first parents were destined to active labor during six days of the week, else what would be the meaning of the rest of the seventh ? It is evident the ground was not yet under the effects of the curse, and that the earth yielded spontaneously all that man could require ; but even then some labor was necessary in order to the enjoyment of what nature so abun-

dantly provided. The very formation of man teaches that he was designed for some species of labor. It has been clearly demonstrated by comparative anatomy that the formation of all the creatures is in adaptation to their habits of life, and the exercise of their peculiar instincts; as well as to the place which they are destined to fill in the scale of creation. The human species is no exception to this universal law of creation. The wonderful organization of man, in adaptation to the work given him to do, has been already noticed. The human hand furnishes a distinct, and irresistible argument for the existence of God; while it affords a not less convincing proof that man was originally designed to labor. It is to the hand as directed by an intelligent mind, that we are indebted for all mechanical inventions.

Taking man's constitution as the index, in accordance with universal analogy, it is evident that labor was the original law of his being. If angels—pure and holy spirits—are actively employed in the service of God—and if irrational creatures, with material organization are destined to a certain amount of labor, in prolonging their existence, may it not be legitimately inferred that man also combining the material and the mental must be designed for activity and labor. Nor is this all that may be adduced

from the nature of his constitution. It is clear to a demonstration that without labor, either in a holy or a fallen state man's capabilities and powers could never be disclosed. Without the arts of industry many of his latent faculties of invention must lie for ever dormant, and the marvels of science and art which these have exhibited must have been forever lost to the page of human history. Indeed, until the last invention of genius shall be constructed, upon the eve of the world's dissolution, the full extent of man's mental and physical capability shall not be made manifest. It thus appears that while labor is necessary to man in his individual and relative position, it is also necessary to exhibit what man was as God made him, and what mysterious treasures Divine goodness had stored up at creation for his future benefit even in a fallen state.

It is not the *fact of labor*, as the law of existence, that has produced human misery. Nor is labor in itself any evidence of a fallen state. It is the nature, the amount, and the aggravating circumstances in which labor must be prosecuted, that tend to characterize it as evil in man's estimation. The introduction of moral evil has deranged the nature and increased the quantity and aggravated the circumstances of human toil. Its evils are not inherent, but may all be traced to the fountain of moral evil. In

man's original constitution there was absolute perfection. The finished works of creation were all pronounced "very good" by their Divine Author. Man's mental and physical constitution responded harmoniously to the works of nature, while the appropriation of what infinite goodness had provided was but the increase of human happiness. There was nothing in the primary law of labor repugnant to man's tenderest feelings. Activity was the most joyous part of his existence. He could run without being weary, and walk without fainting. In his system there was no weakness, giving rise to suffering under exertion; and in his labor there was no disappointment, to perplex or disturb his mental complacency. The duties assigned to Adam in Paradise were as pleasant to his entire constitution, as the prospect of his luxuriant garden was to his organ of sight, and perception of beauty.

It was the curse—the blight of sin—that changed the entire aspect of human employment. Beneath the frown of an angry God, the elements of nature were convulsed—the earth became not only barren, but thorns and thistles sprung up as the indigenous productions of the soil. The original, spontaneous, vegetative powers of earth were arrested, so that to man, the offender, it could only yield its reluctant produce, when moistened with the sweat of his brow. It

is therefore clear to a demonstration that the evils of labor are not in its nature, but in the quantity necessary to subdue the soil thus blighted—in the liability to fatigue and exhaustion, inseparable from the shattered constitution of man as fallen—and from the circumstances, relative and social, in which human toil must be endured. Labor is healthful and pleasant under proper regulations; all its embittering elements are the consequences of sin.

It is evident, however, that in ascending from a fallen state of utter destitution—such as that of Adam, thrust out from the garden, to a future state of comparative ease and comfort such as his descendants shall attain during the millennium—the toils of labor must be endured, and the graces of faith and patience duly exercised and strengthened. The human family must be painfully taught what has been forfeited physically, as well as morally, by the fall, and thus at length, through bitter experience, be rendered better able to comprehend and appreciate, these temporal blessings which are bestowed by God, though communicated through intermediate channels. Besides, in the moral government of God all events and instruments are so arranged and harmonized as to accomplish his purposes and show forth his glory.

This is peculiarly illustrated in the history

of human toil. To man, as fallen, the law of labor is of the utmost importance and advantage. It is true that many seem to speak and to act as if labor in itself were the curse; but such speak unadvisedly and act without due reflection upon the providence of God. The entire absence of labor could not ameliorate the condition of the human family, while the depraved passions and appetites remain unrestrained. Universal idleness in such circumstances would make earth one wide-spread hot-bed of iniquity, and evoke the ghostly features of even hell itself! Who are the pests and plagues of society, but such as are idle, whether found in the ranks of wealth or the rags of poverty? To remove human labor and leave human depravity, would deteriorate rather than improve man's condition. There was mercy as well as judgment in the decree which enjoined him to "subdue the earth," even though it must be "in the sweat of his brow." With his present constitution he could not be idle and yet be happy. Indeed it is questionable whether in any circumstances a being naturally active could be happy in a state of physical inertia. Even mental activity could not satisfy the native propulsion of a material organization invested with life. If, then, this native tendency to action were not restrained and exhausted by lawful

labor, it would be all embodied in the production of crime. It has been well remarked by an eminent writer * that "if man were not obliged to toil for his bodily sustenance and comfort, his native restlessness would impel him to deeds which would throw society into hopeless disorder, and deluge the earth with blood." How true is the language of the poet:—

"That like an emmet thou must ever toil,
Is a sad sentence of an ancient date—
And, certes, there is for it reason great;
For though it sometimes makes thee weep and wail
And curse thy stars, and early rise and late,
Without 'en that would come a heavier bale—
Loose life, unruly passions, and diseases pale."†

The crowning evil in connexion with human toil is, that in certain states of society, the amount and the nature of the labor demanded are such, that mental and physical slavery is the result. To this the Divine record bears testimony in the history of the Hebrews as enslaved in Egypt. "The children of Israel sighed by reason of their bondage, and they cried, and their cry came up unto God by reason of their bondage." Under this type of slavery the body is so exhausted and impaired by manual labor, that the mind is utterly unfitted for intellectual exercise. In many modern cases of nominal liberty *right* is

* Dr. M'Cosh.
† Castle of Indolence.

overlaid by *might*, and selfish ambition is found wreathing a yoke of bondage, almost as galling as ancient slavery. It is here that the evils of labor, are experienced in their most aggravated forms ; but it is here also, that mechanical inventions come to the aid of oppressed humanity. As the God of Jacob heard the cry, of the enslaved Israelites, and with a mighty hand accomplished their emancipation ; so the God of providence hears the cry, and recognizes the suffering of the oppressed, and by the invention of this, and that implement of industry works their deliverance. It may be that the first efforts of machinery will increase those sorrows, as the demand of Moses did the woes of the Hebrews ; but when the transition period from manual to mechanical labor has transpired it will uniformly be found, that all parties have been benefitted by the changes introduced. The tendency of mechanical inventions is to give mind supremacy over matter, and to establish that dominion accorded to man, in his original charter. In proportion as man understands his privileges, and exercises his capabilities, amidst the profusion of nature ; in that proportion will he find its adaptation to his peculiar circumstances, and in so far as he obeys the original mandate, "*Subdue the earth,*" will he find its treasures laid at his feet. "The earth

hath God given to the children of men," consequently, it is their province to discern, and dispose of the riches therein deposited, so as to promote human comfort. It is with this view that art is made auxiliary to human power, and has enabled man to carry his researches, and appropriation of terrestial things, beyond the primary limits of manual capability. Nor is this all, the ultimate tendency of inventions is, to emancipate the human family from the heavier portions of manual labor, and to give the mind more extensive power, so that machinery may take the place of human hands, and one individual be able to accomplish what hundreds could not have effected.

THE TENDENCY OF INVENTIONS TO MITIGATE HUMAN TOIL.

The application of machinery is the extension of man's mechanical powers. With the levers and pulleys of his own mechanical frame, he can raise a given weight, or transport a burden through a given space. But how limited the extent of his unaided efforts? How soon must all his native energies be exhausted? But seizing nature's elements, and applying nature's mechanical laws, he extends his powers to inanimate objects; so that instead of his mind directing the machinery of his own hands, or his own

mechanical system, only it becomes the directing agency of a vast and complicated machinery; effecting results beyond the capability of thousands of his species. Without artificial machinery, the efforts of the human mind must be limited by the efforts of the human hands; but with the full development of mechanical inventions, the mind will be enabled to establish a most comprehensive supremacy over the world of matter. How feeble the power of the human hand, compared with the stroke of the steam-engine, and yet these hands can direct all its movements. How diminutive is the helmsman when contrasted with the mighty ship, which he directs in her course through the waste of waters; and yet it is but the extension of his moral and physical power, over the varied parts and movements of this vast machine. How apparently insignificant are the operatives in a spinning mill, compared with the magnitude of the machinery by which they are surrounded; and yet all these wheels, and shafts, and spindles, are but an extension of their own mechanical system, presided over, and directed by their mental being. The desired results are increased ten thousand-fold, and yet, the amount of manual, and mental exhaustion is proportionally diminished. It is thus, that by mechanical inventions, man establishes his supremacy over the elements

of nature, in order to employ them in his service, and render them subservient to his interests.

How different is the amount of physical force required in a modern stone quarry—with powder for rending the hardest rocks, with levers and cranes for lifting the huge masses—with railway trucks to remove them to a distance, and machinery to prepare, and place them on the building—compared with the operations of ancient times, when hundreds of slaves were yoked to a block of stone, to remove it from the quarry to the destined building! Similar changes have occurred in every other department of operative production. The plough rapidly effects what a whole community could not accomplish with the spade. The sickle, the scythe, and the modern reaper cut down the yellow grain with a velocity which the hands of the whole population—unfurnished with an implement—could never have attained. Thus labor is set free from the agricultural world, to meet the demands of the commercial, without a diminution of the food raised, or the capability of preserving it. Nay, so divinely regulated have been the agricultural and manufacturing implements, that modern draining, subsoil ploughing, reaping, thrashing, grinding and baking machinery, stands contemporary with the steamship, the spinning mill, the power loom, and the railway. And thus, while

there is division of labor upon an extensive scale, each department is found keeping pace with every other. Consequently, the increase of the human family, or their advancement in one or other department of civilized comfort never outstrips the amount of requisite provision yielded by the soil. Nor even where that provision is increased a thousand-fold, does the burden of toil press heavier upon the peasant, or the agriculturalist. Progressive discovery and invention are constantly balancing between the amount of produce required, and the amount of toil; so that the latter is gradually diminishing in each department, while the former is steadily increasing throughout the whole.

Thus, it is manifest, that in every department of labor, machinery is taking the place and performing the office of human hands. The products of the mineral, vegetable, and animal kingdoms are assuming the place, in the region of toil, and accomplishing the purpose of men under a former system. In the spinning mill, power loom, and the railway, the steam engine is the substitute for animal strength. A pint of water and a pound of coal originate a power and sustain a motion which would soon wear out the human system of the strongest operative. The metal fingers, moved with exhaustless energy and devouring speed, set at

defiance all attempts of manual competition. A steam engine of one hundred horse power has been computed at the strength of eight hundred and eighty men.* This is sufficient to produce and sustain the motion of fifty thousand spindles, each producing a separate thread of a mile and a quarter in length, in twelve hours. Thus every twelve hours of fifty thousand spindles will produce sixty two thousand five hundred miles of thread, a length sufficient to go two and a half times round the globe. In ordinary practice these fifty thousand spindles require seven hundred and fifty persons to superintend their operations ; but, by the aid of this machinery, propelled by the power of steam, they can convert as much raw cotton into yarn as would have required two hundred thousand persons by the former method of spinning. Thus, by the aid of inventions, which is simply the employment of so much water, and coal, and iron, the labor of one individual is made to equal the combined efforts of two hundred and twenty six. This holds true in a greater or less degree of every other department of machinery where steam is employed ; the rapidity of production is accompanied by the decrease of human toil. How remarkably is this illustrated by the railway, which is, indeed, the great conservator of

* Instincts of Industry.

human strength! Were the same distances traversed by walking, or even by the best modes of locomotion previously introduced, how soon would the human system wear down under the operation? But the entire sum of physical strength would be utterly inadequate to meet modern demands; hence all that has been obtained beyond the powers of walking, must be put to the account of human inventions. Nor is the amount alone affected; this entire increase of locomotive power has been obtained while there has been a corresponding decrease of bodily fatigue.

The reduction of human labor might be illustrated by the history of each individual machine, as well as by the productive power of all combined. The human mind is gradually planning and constructing some implement of industry, which may release the human hands. Thus the mind is gaining supremacy over matter —the mental is directing and controlling the material. The higher and nobler faculties of man are expanding, while his physical powers are relieved and his toil diminished. But this process will not be completed by merely transferring the burden of toil from the physical to the mental. The ultimate tendency is to release the whole man from toil as a burden, and to make necessary labor a pleasant exercise. In

the rapid progress of the present age may be seen signs of approaching deliverance from the evils incident to manual labor. Already are the heavier kinds of work transferred to untiring machinery, so that by mere direction, one man can accomplish what previously hundreds could not have affected.

OBJECTION.

"Why has not the introduction of modern inventions already produced the results specified?" "Is it not a fact that the population of our cities is as busily occupied as before the introduction of spinning mills or railways?" It is freely admitted that the fruits of modern inventions are but partially developed, and the community, as a whole, is more busily occupied than even under the former system. But there are both moral and social reasons sufficient to account for the fact. The moral state of the masses is not yet such as to admit of that full measure of relaxation which machinery is calculated to afford, while there are social revolutions sufficient to account for the seeming paradox, that, while machinery is doing the work of man, humanity itself should be more occupied. It must be observed that in connexion with this rapidly increasing power of production at home, new nations have been springing up abroad, at

once absorbing the operative classes, and increasing the demand, in accordance with the powers of production; while national wealth and comfort have been increased to all. Besides, the covetous spirit of man may and will pervert the choicest blessings. The race for riches has kept pace with the newly developed means of acquisition, and consequently, that release from grinding toil, which ought legitimately to be accorded to the operative, has been either wasted in fruitless competition or turned into the channels of personal aggrandisement. But though, in the present progressive state of transition, in the social history of the world, and in the earlier efforts of mechanical invention, the demand may seem to keep a-head of the increasing speed of production; and though this at first sight would seem to indicate that no release from toil can be expected by the introduction of mechanical inventions, yet, viewing the subject as a whole, it is evident that when machinery has attained its climax, and when the various departments have been balanced and adjusted, and when the entire system of manufacture and commerce shall be directed and regulated by sound moral principles, the necessary tendency of machinery must be to emancipate the operative classes, and thus equalize the privileges of those who employ and those who labor. Even

under all the disadvantages resulting from a transition state, and in spite of the covetousness of the age, the hours of toil are already abridged, and the physical system so far relieved as to encourage mental culture. The ultimate result of this must be the revival of social and domestic affections, which were ready to expire under the exhaustion of slavery. Enlightened legislation has judiciously fixed the age as well as the time, beneath, and beyond which, grasping employers shall not be permitted to protract the hours of toil in public factories. This legal movement has been succeeded by another—still more praiseworthy, as it presents a nobler aspect of mutual interest between employers and employed—in which merchants and shopmen have voluntarily agreed to abridge the hours of daily attendance, besides, in many notable cases, adding the Saturday half-holiday as preparatory to the Sabbath. Let the covetous learn that "a man's life consisteth not in the things that he possesseth;" and let the avaricious be taught the benevolence of the Gospel: then shall the Saviour's definition of a day be taken as a standard, and all classes shall enjoy the domestic bliss of the evening. "Are there not twelve hours in the day?" was the interrogation of Him who set the sun in the firmament. Will any man be prepared to say, that this is not a sufficient time to

devote to the pursuits and objects of the present world? The aid of machinery renders the abridgment of the period of labor practicable. It is avarice alone that gives rise to a spurious competition, and encroaches upon the privileges of domestic life. It is evident that even now the long-hour system, opposed at once to the claims of nature and grace, is doomed. That God who made the sun to rule the day, also framed the human constitution in accordance with this physical arrangement, and that which the introduction of sin has deranged in the past history of man, the grace of the Gospel will rectify in the coming Millennium. Then, indeed, shall the poet's vision be realised—

"The hand that held a whip was lifted up
To bless; slave was a word in ancient books
Met only; every man was free; and all
Feared God, and served him day and night in love." *

THE TENDENCY OF INVENTIONS TO ALLEVIATE HUMAN MISERY.

It has been previously established that the whole tendency of machinery, legitimately applied, is to reduce the quantity, and improve the character of manual labor. The transference of the heavier portions of human toil to mechanical inventions, is the direct method of cutting off a vast amount of physical suffering. Indeed, under proper regulation, machinery

* Pollok.

renders it possible to remove all that constitutes actual suffering in legitimate labor. But it is equally evident that the mitigation of mental and physical exhaustion must be accompanied by a reduction of disease. The substitution of activity in superintending machinery, for the patient endurance of grinding toil, must necessarily tend to the health of the mental and physical system.

Mechanical inventions also tend to promote health, and to alleviate human misery, by removing those physical causes which produce disease, especially in towns and cities. The improvements of modern times in architecture, in the formation of streets, the introduction of water, the subterranean sewerage, the burning of smoke, the disinfection of putrid substances, the lighting, ventilation, and construction of public buildings and private habitations, must all tend to improve health, prevent disease, and mitigate suffering. The progress of medical science, aided by chemical inventions, gives ever increasing access to the pharmacopœia of Nature; while, already, the improvement of surgical instruments, in conjunction with the use of chloroform, and other narcotic agents, has mitigated the excruciating pain formerly endured under surgical operations. Besides, the discovery of this agent has marked a new epoch in the heal-

ing art, by giving a wider range to human ingenuity, by sparing the feelings of the operator, as well as the pangs of the subject. Is it not a remarkable fact that this secret should be disclosed in Britain at the very time when it may be most extensively employed in dressing the wounds, and amputating the shattered limbs of her soldiers, upon a distant field of battle? Are not these signs of coming deliverance from a vast amount of physical evil? What the achievements of the future may be, none can predict, but enough has already been realized to warrant the hope that agents such as these may be rendered available in mitigating all those forms of suffering which are incident to our nature in a fallen state. The mind must be sceptical indeed, that recognizes not the hand of God in the discoveries and improvements of medical science, as really as that hand is seen in the forms of disease. Do we not even now behold in the triumphs of the present age the harbingers of that blessed future, which the poet anticipated, under the sanction of inspiration, and of which he says—

> "Disease was none; the voice of war forgot;
> The sword, a share; a pruning-hook, the spear.
> Men grew and multiplied upon the earth,
> And filled the city and the waste; and Death
> Stood waiting for the lapse of tardy age
> That mocked him long."—POLLOK.

THE TENDENCY OF INVENTIONS TO INCREASE THE SOURCES OF HUMAN COMFORT.

The reference here is not simply to the mitigation of toil, or the alleviation of suffering—which must of themselves detract from human comfort —but to the general diffusion of those elements which, in a personal, relative, and social aspect, lead to its most extensive enjoyment. In Eden, our first parents had all that the pure heart could desire, or that the material system could need in a state of innocence ; but, in consequence of the fall their descendants are subjected to innumerable wants. The earth, as a vast depository, contains all that they require to supply their physical necessities, but these elements of comfort are scattered wide as the world itself, throughout the mineral, animal, and vegetable kingdoms. Many even of the necessaries of life are not only beyond the reach of man in a given locality, but also beyond the possibility of discovery, or appropriation, without the help of mechanical inventions. Art is well defined to be "the proper disposal of the things of nature by human thought and experience, so as to answer the several purposes of mankind."* Is it not also the intermediate, secondary means by which the God of Providence, through human

* Lord Bacon.

industry, renders available the various elements of comfort, which have been profusely deposited in the different departments of that world, which, as a whole, is constituted the habitation of the human family. Thus the development of the arts is destined to occupy a prominent place in the manifestations of Divine beneficence. A portion of that wisdom which foresaw and provided for man's necessities in nature, is imparted to his mental being, so that from age to age he may appropriate and enjoy what his Creator has bestowed. It is thus that there is a common provision for a common race, stored up in nature, yet so distributed in the wisdom of God, that man's faculties and powers may be exercised in its appropriation, and human industry rewarded by its progressive development. Thus, while mechanical inventions extract and prepare the various substances of every region for the use of man, railways and steam-ships, accompanied by all the inferior and local modes of transit, lay them upon his table, or deposit them in his wardrobe. Indeed, the very house in which he dwells, the furniture of his apartments, the fire that warms, and the light that illuminates, are so many monuments of mechanical invention. The luxuries, and substantial comforts of his table, are each and all under tribute to the sciences and arts. By the help of marine and

terrestrial machinery, the luxuries of one region are profusely strewed upon another. Though locally far removed from the lands of the tea-plant, the vine, the olive, the orange, and the palm, their produce is spread upon our table; while, in reciprocal commerce, our spinning-mills and power-looms produce for the million, clothing adapted to the climate and habits of those by whom they are cultivated. While the Eastern children are gathering the oranges, the grapes, or the tea, that may soothe us in affliction, or stimulate our flagging spirits under daily toil, our children in the factory are joining the ends, and guiding the threads and forming the fabrics which will comfort and adorn the aged and the young of these distant regions. It has been computed by an ingenious calculator, that, in Great Britain alone, there is machinery doing the work of five hundred millions of men; that is to say, the inventions of varied kinds in the United Kingdom will, in a week, weave as much cloth, and prepare as much food, and supply the human family with as many comforts as could be made by hand, if all the adult population of the globe were exerting and exhausting their personal powers of production.

Not less astonishing are the mechanical inventions for dyeing and printing these artificial fabrics, by which the glowing tints of nature,

and the inimitable forms of beauty, are transferred in infinite variety, and with incalculable speed to the heaviest vesture, or to the lightest of those gossamer fabrics which are destined to adorn the person and decorate the dwelling. Nor is it substantial comfort alone that genius contemplates in the construction of mechanical inventions. Whatever tends to elevate the taste and please the fancy—whatever imparts an influence to industry or extends civilization, finds here an auxiliary. The achievements of the past and the present, are extended to the future by the aid of modern inventions.

> "The mere mechanic skill,
> That stamps, renews, and multiplies at will;
> And cheaply circulates, through distant climes,
> The fairest relics of the purest times."—ROGERS.

How great the contrast between the home of the British manufacturer, artizan, or peasant, when compared with the wigwam of an Indian chief, or the hut of an ancient Druid. Or if a complete contrast of the person is desired, compare the native barbarians of Britain, in their scanty untanned habiliments of skin, with our portly merchant in his broadcloth, or his comely partner in her silks, satins, lace, embroidery, and jewels, and it will be at once apparent what machinery has accomplished in

the progress of taste and the advancement of civilization. But a richer harvest is yet to be reaped out of this world's vast resources, when the *earth, subdued,* shall open her hidden stores, and the casket of Nature exhibit its concealed treasures in obedience to the long lost key of human knowledge, as embodied and applied to the ancient wards in the form of mechanical inventions. The wants of the past have all sprung out of man's ignorance in the use of temporal things, and not from any parsimony in the Divine Benefactor. To this there shall be abundant evidence during the Millennium. Of that blessed era it will justly be recorded—

> "Men grew and multiplied,
> But lacked not bread; for God His promise brought
> To mind, and blessed the land with plenteous rain,
> And made it blest for dews, and precious things,
> Of heaven, and blessings of the deep beneath,
> And blessings of the sun and moon, and fruits
> Of day and night, and blessings of the vale,
> And precious things of the eternal hills,
> And all the fulness of perpetual spring."—POLLOK.

THE TENDENCY OF INVENTIONS TO PROLONG RATIONAL LIFE.

The reduction of exhausting toil, the mitigation of suffering, and the increase of the means of physical comfort, each and all, tend to the increase of the species, and prolongation of human life. But it is evident that, to prolong

the natural life of the species, must necessarily lengthen out that rational life which is on earth peculiarly the glory of man. The question is not simply, how long an individual has existed, but what has been the extent of his mental and moral development, and what the amount of rational life which has been devoted to the grand purposes of man's original destination? Some there are who live as much intellectually in five years as others do in fifty. Some who accomplish more in the works of benevolence in a few months than others effect in the longest lifetime. How vast must be the influence of mechanical inventions upon the exercise of all the intellectual powers? Nor is that influence less in giving scope and stimulus to those which are moral. The whole art of printing is associated with the nurture of intellectual being. Though the press cannot create a thought, yet it is capable of recording and transmitting all that is worthy of being retained; and consequently, while the physical being of innumerable generations has vanished, the mental and moral being is revived and reproduced from age to age: thus "feeding with the food of thought" the rational life of immortal beings. Nor is this true of the printing press only, all the implements of industry are auxiliary to this consummation. If the mind is the measure of the

man, all that helps the man must directly or indirectly tend to the expansion of the mind, and what is this but the extension of rational existence?

It must not be forgotten that the rational existence of the benefactors of the race was measured by the amount of good they were able to accomplish. In this respect, the public life of Immanuel, stretching over only three and a half years, was so filled up with benevolent acts, that the evangelist John declares the impossibility of their being recorded.* In the public history of the apostle Paul there is exhibited a living, spiritual energy, which cannot be measured by years, but by acts of self-devotement. And yet how much of that precious life was spent in tedious journeys by sea and land, which would now be accomplished in a few hours by the help of railways and steamboats? The value of time, and the reduction of physical exhaustion, are not yet sufficiently appreciated, though the speed of modern locomotion is the lengthening of life, measured by the amount of good that a man may accomplish. It is impossible to calculate what the burning zeal of the apostle might have effected with the aid of modern inventions. What would not Luther, or Calvin, or Knox, have given for a single year of the railway sys-

* John, xxi. 25.

tem? The actual labors of patriots and reformers, of philanthropists and Gospel missionaries, would have been doubled by the present modes of conveyance. The time formerly spent in protracted sea journeys, may now be spent by the heralds of the cross in actual evangelistic labor. The running to and fro of many in the earth, as foretold by Daniel, must necessarily be accompanied by the increase of knowledge; and what is the increase of knowledge but the expansion of rational life?

But the influence of mechanical inventions, in prolonging rational life, is not confined to those portions of machinery which merely record the triumphs of genius, deposit truths, or carry rapidly over space, the heralds of political or spiritual emancipation. The tendency of all inventions is to abridge the hours of toil, which must necessarily leave a larger portion of human existence to be devoted to the culture of man's mental and moral nature. Hitherto the hours of manual labor have borne a large proportion to the hours of mental cultivation or spiritual reflection. The tendency of machinery, regulated by moral principle, is to reverse this anomaly, the fruit of moral evil, and to give mental employment the complete ascendency over that which is merely manual. As the calculation of *miles* in journey is now giving way before the

calculations of *time*, so the occupations of physical life shall be supplanted by those which are mental; and even those which are mental, under the sanctifying influence of the Gospel, shall be characterized as moral and spiritual. The rational life of man, elevated, emancipated, and purified, shall be devoted to the service of God, and realize, in the enjoyment of the Divine favor, that which constitutes the real existence of all immortal beings.

THE TENDENCY OF INVENTIONS TO PROMOTE UNIVERSAL PEACE, AND RESTORE THE HUMAN FAMILY TO ONE BLESSED BROTHERHOOD.

We have already considered the influence of the printing press upon the diffusion of knowledge, and the consequent extension of civil and religious liberty. The whole history of mechanical inventions is associated with the progress of commerce and international communication. The extension of commerce has gradually undermined the strongholds of prejudice. We admit that the primary cause—the alienation of man from God, which, in its effects, separated man from man—must be removed, before the restoration of brotherhood can be realized; but though the result is moral, the providential circumstances, and the relations of men, are embraced among the means which shall accomplish this

desirable result. It is true that, to reconcile man to man, he must first be reconciled to God. This is the ultimate design of that religion which the Bible propounds—a religion which stands distinct from all human theories of amelioration, and which must never be confounded with mechanics or philosophy. But this religion, in accomplishing its high mission—the restoration of peace on earth—disdains not to employ ordinary means in effecting its triumphs. True Christianity smiles upon the efforts of human industry, and becomes the animating spirit of genuine scientific progress. The kingdoms of Providence and Grace are contemporary, consequently the subjects of both shall rejoice together in the triumphs of their King. Peace on earth shall be the evidence and type of peace with heaven, during the coming Millennium. The citizens of the world shall, no less than the members of the Church, recognise Christ as Lord, and fellow-men as brethren. Already are the materials of civilization being prepared and scattered over the world. The division of labor is being gradually effected by emigration, by new discoveries of the precious metals, by the invention of machinery, by the transition of politics, and by the opening up of home and foreign marts of merchandise. Are not all these indications of a better day, when "nation shall not lift up

the sword against nation, nor learn the art of war any more." It has been well remarked by Dr. Wayland, that "God intended that all men should live together in friendship and harmony. By multiplying indefinitely their wants, and creating only in particular localities the objects by which their wants can be supplied, he intended to make them all necessary to each other, and thus to render it no less the interest than the duty of every one to live in amity with all the rest." Thus, when men come to read the book of nature in the light of revelation, and when they come to see with David that unto God belongs the earth, with all its fulness; and with the good Samaritan, that every man is a brother, then, indeed, shall the mechanical inventions be rendered tributary to the universal benefit of humanity, while glory to God, as the giver, shall be the universal ascription of praise and gratitude.

We admit that, notwithstanding the hopes excited by the London Exhibition of 1851, of continued peace, and enlarged national intercourse, the dark clouds have lowered, and another volume of human history must be written in blood. True it is that those nations, which met in the Crystal Palace in mechanical rivalry, have now met in the field of carnage, to decide with the weapons of death the fate of nations.

This fact is an evidence, that the *Gospel only*, received and believed, can medicate the festering diseases of depraved humanity. But it furnishes no argument against the truth already announced, regarding the tendency of machinery to promote the brotherhood of nations. While it is the religion of the Bible alone that can heal the wounds of humanity, that religion embraces all social duties, and defines our relations to God and man. Consequently, by the aid of machinery, man will be enabled to do for his fellow what, with the purest motives and the warmest heart, he could never accomplish by the simple and immediate operation of his hands upon the elements of nature. There is implanted in our constitution a principle, which leads man to smile upon whatever tends to the general benefit of the species; but it is also accompanied by a principle of attraction, which draws us insensibly to the author of the good effected. Apply both in the exercise of a free agency, and under the guidance of moral principle, and man will become the friend of man. Each will be the minister of good to others, and thus shall rise and roll the full tide of Millennial felicity. The assurance expressed by the illustrious President of her Majesty's Commissioners of the Industrial Exhibition, though future, is not the less true as regards its realization, when he said, that

"nobody who has paid any attention to the particular features of our present era will doubt for a moment that we are living at a period of most wonderful transition, which tends rapidly to accomplish that great end—to which, indeed, all history points—the realization of the unity of mankind."

It is freely admitted that the perversion of mechanical, as of any other gifts of the great Benefactor, may tend to present alienation of man from his fellow. It was thus in the early history of the arts, that the building of the Tower of Babel provoked the wrath of God, and led to the confusion of the builders, and the scattering of the human family. But there was indicated in that judgment no frown upon architecture, but only upon rebellion; and, consequently, though this ancient monument of art was the occasion of local separation, because of the confusion of languages, mechanical inventions form a part of those comprehensive plans by which locally separated, and long alienated tribes of the human family shall become acquainted with each other's language, and habits, and interests. The commerce of modern times has done much to remove national prejudice, but machinery lies at the very foundation of that commerce. The mariner's compass, the spinning-mill, the power-loom, the steam-ship, and the railway, are

the implements in daily use, originating and sustaining commercial intercouse. But besides those implements which promote physical comfort, the printing-press, pouring forth Bibles by the million, is the grand mechanical mediator between the alienated nations of the earth. That influence which has already been so powerfully felt in India, and in the South Sea Islands, before which local prejudice is rapidly vanishing, shall yet be experienced throughout the world. The intercourse of nations is comparatively in its first development. But when the steam-ship is daily bearing its living freight from shore to shore; when the railway is uniting the most remote places of the largest continents, and when the telegraph is transmitting, with lightning speed, the messages of business or of friendship from distant climes, how can the members of the human family remain in bitter hostility, or keep up that feeling of selfish isolation which under a former state of development, characterized the human race? The tendency of mechanical inventions to unite the separated sons of Adam, has already been clearly evinced; but the achievements of the past and the present are but faint types of the future, when that which has been done locally shall be accomplished for the world. There is a good time coming, when the poet's description shall be a blessed reality:

"None were ignorant, selfish none;
Love took the place of law; where'er you met
A man, you met a friend, sincere and true.
Kind looks foretold as kind a heart within;
Words, as they sounded, meant; and promises
Were made to be performed. Thrice happy days!
Philosophy was sanctified, and saw
Perfection, which was thought a fable long.
. . . . . .
The desert blossomed, and the barren sung.
Justice and Mercy, Holiness and Love,
Among the people walked, Messiah reigned,
And earth kept jubilee a thousand years." *

THE TENDENCY OF MECHANICAL INVENTIONS TO PRODUCE THOSE PHYSICAL CHANGES UPON EARTH WHICH REVELATION GIVES REASON TO HOPE SHALL YET BE ACCOMPLISHED.

In considering the tendency of inventions, it has been assumed that God designs to promote the physical, as well as the moral interests of humanity. Were this questioned, the benevolence of God might be demonstrated from the whole field of nature, as adapted to the wants and circumstances of the creature; while the Bible is at once the monument and depository of evidence, which it would require volumes to elucidate. But assuming what every principle of reason must confirm, it is evident that the tendencies of mechanical inventions already adduced, are sufficient to show that they are of God. Were it necessary to pursue the argu-

* Pollok.

ment further, it might be conclusively shown that these and all other mechanical tendencies are destined to effect those physical changes upon the world, which the goodness of God, and the necessities of man, seem to indicate, as yet to be realized, in the onward march of discovery and invention. The Bible tells us what the world was as God made it ; and what it became as blighted by the curse of sin, and overwhelmed by the sweeping deluge. What was originally "very good," became armed against man, the transgressor, with innumerable evils. That world which was bestowed in covenant grant, became as forfeited, a hostile region, only to be reclaimed by the skill and industry of the fallen family. Since the day that Adam was thrust out from the Garden, the work of subjugation has been progressing. Already has this sin-smitten earth been divested of half its physical evils ; while Revelation exhibits a still brighter period of progressive development during the Millennium. Then, there is good reason to believe, that literally as well as spiritually, "the wilderness and the solitary places shall be glad, and the desert shall rejoice and blossom as the rose."

If the God of infinite goodness would not permit the universal reign of moral evil in this revolted region, but made the fall of man the occasion for the interposition of redeeming love, is there

any ground to believe that physical evil shall be permitted to hold universal dominion in that world which has been selected as the field of conflict, between the Prince of Peace and the powers of darkness, and which has been signalized by the triumphs of the former over the latter? The moral victory has been won, and soon the dragon shall be bound a thousand years. The physical conflict with nature is progressing. To man it has been entrusted under the original mandate, '*subdue the earth*,' and through man as the mental instrument in the Divine hand shall the victory over nature also be obtained. The miseries of groaning creation shall in due time be alleviated, and the creature that was made subject to vanity, shall be restored to its appropriate place, and made to subserve its original purpose. If the moral effects of sin upon the soul of man are removed through the grace and Spirit of God in the work of redemption, and if the Divine image is restored to that soul, which has become a moral ruin, is it too much to expect, that there shall be a corresponding restoration of the physical world, to at least a measure of that beauty, and glory, and fertility, and salubrity, by which it was characterized as a work of God? May we not even literally anticipate the fulfilment of the promise? "Instead of the thorn shall come up the fir-

tree, and instead of the briar, shall come up the myrtle-tree ; and it shall be to the Lord for a name, for an everlasting sign that shall not be cut off."

We freely admit that on this point the Bible is neither so full nor explicit, as it is upon all that pertains to the work of redemption ; because the grand design of Revelation is, to lift man's affections above the world that *is*, and to direct his hopes to that world which is to come. But there are general principles propounded, and incidental hints given, which considered in the exercise of faith, will lead to the assurance of a glorious physical, as well as moral redemption. In the creation and disposition of earth's elements—in the mental and material constitution of man, and in the dispensation of providence, there is conclusive evidence, as regards the Divine purposes, in relation to the future condition of the physical world. Much has already been done to change the aspects of the globe, and to improve the temporal condition of man. The achievements of the past are sufficient to warrant the most enlarged expectations regarding the future. Ascending the mount of observation with the poet Young, we may hear him addressing us as he did Lorenzo—

"Come, my ambitious! let us mount together,
And from the clouds, where pride delights to dwell,
Look down on earth. What seest thou? wondrous things!
Terrestrial wonders that eclipse the skies.
What lengths of labor'd lands! what loaded seas!
Loaded by man for pleasure, wealth, or war!
Seas, winds, and planets, into service brought,
His art acknowledged, and promote his ends.
Nor can the eternal rocks his will withstand:
What level'd mountains! and what lifted vales!
O'er vales and mountains sumptuous cities swell,
And gild our landscape with their glittering spires.
Some 'mid the wandering waves majestic rise,
And Neptune holds a mirror to their charms.
Far greater still! (what cannot mortal might!)
See, wide dominions ravish'd from the deep!
The narrow'd deep with indignation foams,
Or southward turn to delicate and grand.
The finer arts there ripen in the sun.
How the tall temples, as to meet their gods,
Ascend the skies! the proud triumphal arch
Shows us half heaven beneath its ample bend.
High through mid air, here streams are taught to flow;
Whole rivers there, laid by in basins, sleep,
Here plains turns oceans; there vast oceans join,
Through kingdoms channel'd deep from shore to shore,
And changed creation takes its face from man.
Earth disembowel'd! measured are the skies!
Stars are detected in their deep recess!
Creation widens! vanquished nature yields!
Her secrets are extorted! art prevails!
What monument of genius; spirit, power!
. . . . . say,
Whose footsteps these? Immortals have been here;
Could less than souls immortal this have done?"

What would the poet have said, had he seen the triumphs of modern engineering? How much more expansive would have been his vision, had

he gazed upon the manufactories, and ship-yards, and marts of merchandise in our own times? While agriculture has transformed the aspects of the landscape, nautical skill, and steam-power, have changed the appearance, even of the deep. However lofty his strains as elicited by what art and science had then accomplished, much more sublime would now be their theme, when embracing the marvels of science recently disclosed. The steam-ship, and the spinning-mill, and the railway, and the telegraph, were objects beyond the grasp of the most extravagant poetic imagination. But now they are a practical reality; entering at once into the daily pursuits of mercantile enterprize and the ordinary arrangements of social life. Could the distinguished poet of the past, have gazed from his mount of observation upon modern steam-fleets, almost hourly despatched on voyages of business, or warfare, or pleasure —could he have marked the velocity of the railway engine dragging in its train, what seems at times like a street in motion, with its numerous apartments and various classes of a living population—or could he have heard the joyful tidings of the fall of Sebastopol in the Exchange of London, while yet the cloud of dust, and the sheet of flame were ascending from the crashing ruins of the doomed city as trans-

mitted through the agency of the mysterious iron chain by which the distant Crimea is bound to the capital—would he not have asked with still deeper emotions—

"Whose footsteps these?"

and have responded with a deeper emphasis—

"Immortals have been here."

Nay, more, we apprehend, that had he seen the Minister at War, in London, conversing with the Commanding General before the walls of the besieged Russian city, by the aid of lightning, would he not rather have been disposed to exclaim—

"That MORE than mortals have been here?"

Would he not have discovered, by the most convincing evidence, that, though immortals have been there as agents, "the King immortal, eternal, and invisible," was there as the Almighty Author? It is true that immortals are the visible agents in the production of all mechanical inventions. But who is the Author of these immortals? Who gave intelligence to the contriver, or strength and skill to the artificer, by whom machinery is constructed? Are the materials or the operators self-created? Nay! Both owe their existence to God, and both fulfil their mission, and occupy their respective places in the scale of creation. Here, then, is a vast

region of artificial phenomena, constructed by man, and employed for his benefit. We ask, Who is its proprietor? Unto whom redounds the glory of these wonderful works? To some one it must be accorded. Shall it be to man, the agent, or to God, the Author of the agent and his work? It is evident that, unless man made the machinery, as God made the heavens and the earth out of nothing, he has no rightful claim to the glory of their existence, in a world whereof he is but a transitory inhabitant; In the preceding arguments an appeal has been made to Nature, but Nature, so replete with their elements, has no power to proportion or combine them. A reference has been made to their successive development in regard to time, in order to discover whether they are the result of fortuitous circumstances; but Nature and history with one voice declare—

"There 's no such thing as chance;
And what to us seems merest accident,
Springs from the deepest source of destiny.
This various human being's thoughts and deeds,
Are not like ocean billows, blindly moved.
The inner world his microcosmos, is
The deep shaft out of which they spring eternally." *

We have appealed to the constitution of man. The relations and adaptations of that constitu-

* Schiller's Wallenstein.

tion to the world without, have been traced. The past and prospective history of humanity has been viewed in the light of Providence disclosed, and Providence distinctly indicated. But here, as before, the creature is constrained to say, "It is not in me to work the work, nor does it belong to me to receive the glory." Rather will the child of reason, enlightened by the page of revelation, be found saying of this region of phenomena, what was said by our first father, as described by Milton, regarding nature :—

"These are Thy glorious works, Parent of Good!
Almighty! Thine is this universal frame,
This wondrous fair, Thyself how wondrous then:
Unspeakable, who sittest above the heavens,
To us invisible, or dimly seen,
In these Thy lowest works, yet these declare
Thy goodness beyond thought and power divine."

CHAPTER IV.

SCRIPTURAL EVIDENCE THAT MECHANICAL INVENTIONS ARE OF GOD.

THE arguments already adduced by an appeal to facts in the history of inventions, must be conclusive to every mind accustomed to trace effects to their originating causes. We now proceed to state the theological argument in order to prove that it is not only a truth that may be discovered, and defended within the region of philosophy, but also a truth which is clearly revealed in Scripture—"a doctrine according to godliness"—which ought to be studied and reduced to practice in the contemplation of artificial phenomena.

THE PROVIDENCE OF GOD IN RELATION TO MECHANICAL INVENTIONS.

By the Providence of God is understood "His most holy, wise, and powerful preserving and governing all His creatures; ordering them, and all their actions, to His own glory."* This de-

* Larger Catechism.

finition is in strict accordance with the plainest declarations of Scripture, which testify that "His kingdom ruleth over all;" that He worketh all things after the counsel of His will;" that "He doeth according to His will in the army of heaven, and among the inhabitants of the earth, and none can stay His hand, or say unto Him, What doest Thou?" The providence of God has been considered by some philosophical writers as *general;* which consists in upholding certain general laws, without special direction of the individual creatures. Thus it has been said "That the Creator of the universe founded the constitution of nature in such a manner at the beginning, as to stand in need of no succeeding alterations; that He established certain laws in the material and in the moral world, which uniformly and invariably operate, producing all the effects which He ever designed, they should accomplish; as when an artist frames a machine for certain purposes, and for a limited duration, the effects which result from it spring not from the immediate direction and influence of the artist, but from the original frame and composition of the machine." On the other hand, it is maintained that "Almighty God, upon special occasions, directs and overrules the course of events, both in the natural and moral world, by an immediate influence, to answer the great designs

of His universal government." These views are widely different, and have led to much controversy and misconception; though the doctrines of a general and special providence are in no way antagonistic. Indeed, they are inseparably connected. "The general providence of God, properly understood, reaches to the most particular and minute objects and events; and the particular providence of God becomes general by its embracing every particular." It seems remarkable that any professing to bow to the authority of the Bible on this point, should question the special providence, seeing that no doctrine is more expressly stated in the sacred volume. Is it not declared that a sparrow cannot fall to the ground without the knowledge of our heavenly Father; and that the hairs of our head are all numbered? that He "compasses our paths, and is acquainted with all our ways." But even reason must convince those who hold the doctrine of a general providence, that if God has certain designs to accomplish with respect to, and by means of, his intelligent creatures, these designs can only be realized by a particular attention to their individual circumstances, their movements, and all the events of their lives. How is it possible to take care of a whole, without taking care of the parts; or to preserve a species, if the individuals are neglected? Great

and small are relative terms, springing from our limited comprehension of the essential properties of being, which can never be appropriately employed in speaking of the relation of God to His creatures. It is as impossible for a man to create an atom as a world ; and as easy for the Creator to preserve the one as the other. To exclude the idea of a special Providence, reaching every creature in its existence and its actions, is to set limits upon the Holy One, and to measure the power of God by human weakness. The administration of the Divine Government in our world is so arranged that the individual cannot be absorbed in the general, so as to be deprived of immediate care ; nor can the direction of the whole interfere with the regulation of every part. The infinitude of God at once embraces all, and comprehends each individual and element, as though there were none other in the universe. As no creature can possibly exist without God, so there is not a creature that can act independent of Him. His presence fills immensity, His power is the universal operator, whether the instrument be inanimate or animate, irrational or rational. No event, in heaven, earth, or hell escapes His observation, or exceeds his control. The existence of every thing, from an atom to a world, and the actions of every creature, from an insect to an angel, are equally within the com-

pass of His knowledge and the grasp of His power. No event that can possibly occur is too momentous or too minute to be embraced in this administration. The fall of a sparrow, the death of a sovereign, the tints of a lily, the hues of the firmament, the fall of a dewdrop, the overthrow of a tyrant, the course of a river, the subversion of an empire, the invention of a machine, and the development of a national constitution, are each and all under Divine direction. Every hair is numbered, every atom and world assigned their course, every element and instrument directed to their original design. "All things are full of labor," but this labor testifies that they are full of God, without whom existence *is not*, and activity cannot be sustained. In the regions of the atmosphere, in the depths of the dark mine, in the hidden caverns of the sea, Divine Providence is reflected by every object—Divine power is felt in every operation—Divine guidance is imparted to every agent. Actions, as well as creatures, are the exponents of His purposes. Physical changes upon material things, though produced by intelligent agents, are not the less manifestations of Divine designs. The studio of the philosopher, and the workshop of the mechanic, are as much within the domain of Providence as the most secret laboratory of nature's operations. "In Him we live, and *move*,

and have our being." Life in existence, life in contrivance, and life in operation, must equally be traced to the Fountain of universal being. If, therefore, God is acknowledged in this general providence as the Author of those effects which flow from natural causation, ought not His special providence to be equally recognised in those effects of mechanical operation which have been produced by an intelligent agent? If we call the varied processes of nature the works of God, while only instruments in the Divine hand, may we not, with more propriety, call mechanical inventions the works of God, seeing that they have been contrived and formed by agents possessing mental intelligence, imparted and directed by the universal Author? The truth is, that both are instruments in the Divine hand, though in a very different category, and both, when viewed as the exponents of the Divine will, are calculated to elevate the mind from immediate causes, to the fountain of causation. If it may with propriety be said, that

> "Nature is but a name for an effect
> Whose cause is God,"

may it not with equal propriety be affirmed that genius, that mechanical skill, are emanations of Deity, in whomsoever they may be reflected?

In adducing the special providence of God, as regulating and directing the actions of intel-

ligent beings, it might seem as if the actors were divested of a moral character, and had, consequently, no responsibility to the moral Governor. Some may be disposed to ask, why should the instrument employed by a higher power, be dealt with as a moral agent? If every thing has been overruled, and directed by that power, may it not be asked, in the language of the objector to Paul's doctrine, "why doth He yet find fault? for who hath resisted His will?" To this it may be replied that all moral agents have a twofold relation to God. The one as an instrument in the Divine hand, the other as a moral agent responsible to the Divine government. All free agents have power to act under certain limitations, in their personal character; but they may be and are employed, in the administration of the Divine government to effect certain purposes unrevealed, until embodied as facts in history. In the one aspect, a man may be inspired with *genius* by the Spirit of God, but this inspiration does not in any respect change his moral character, or moral relations to God. Though he may be able to produce astonishing changes upon the material world, and though these changes may be again instrumental in effecting moral revolutions, he is as a person, as a moral agent, subject to the same laws, as any other of his fellowmen. The Scrip-

ture record furnishes many instances of this twofold aspect of humanity. Thus, Pharaoh, king of Egypt, is represented in both aspects. God sent Moses with a Divine message to him as a person. To him the will of heaven was distinctly made known, with the seal of an unequivocal miracle; but Pharaoh absolutely refused obedience. In contempt of God, he asked, "Who is the Lord that I should obey His voice to let Israel go? I know not the Lord, neither will I let Israel go." Thus he hardened his heart, rejecting the clearest evidence, and renouncing the highest authority. Shall the purpose of God be frustrated, or the fulfilment of the promise fail? Shall Pharaoh be relieved from doing his part as sovereign, in granting the request Divinely announced? Shall he be simply reserved as a person for final punishment? Nay, the purpose must be accomplished. The command shall be obeyed; but in both the haughty monarch shall be employed as an instrument in doing God's work, though finally destroyed, because in the doing of that work he refused Divine homage. When he would not obey God as a person, he was, nevertheless, preserved as an instrument, until the purposes of God in raising him up had been fulfilled. Hence it was said to Moses, "Now, thou wilt see what I will do to Pharaoh; for, with a strong

hand shall he let them go, and with a strong hand shall he drive them out of his land." Through a series of judgments he was compelled by external influences, to do as an instrument what he absolutely refused to do as a moral agent. Besides, though the act of liberation was good, in so far as it accorded with the purpose and will of God, the person was punished because his will was directly opposed to the Divine will.

Balaam, the false prophet, appears in the same aspect. He was solicited by the messengers of Balak to go, and curse Israel. God commanded him not to go, but his heart was won by the prospective reward. The will of God was expressly revealed to him, as a moral agent. For "God said unto Balaam, Thou shalt not go with them; thou shalt not curse the people; for they are blessed." Beyond this the prophet required no further direction; but when solicited the second time, with the promise of a great reward he desired in his heart to go, though restrained, and God in judgment permitted him to accompany the Princes of Moab, while he employed him as an instrument in the Divine hand to bless the chosen people. As a person he was willing to curse the Israelites, but inspired as an instrument he was constrained to bless; and even Balak afforded the occasion, and enlisted the

prophet, by whom a most sublime prediction, regarding the future triumphs of the Israelites, was poured out in the presence of their enemies.*

The King of Assyria is also presented in this twofold aspect, while permitted to smite the offending Israelites. "O, Assyrian, the rod of Mine anger, and the staff in their hand is Mine indignation, I will send him against an hypocritical nation, and against the people of My wrath will I give him a charge, to take the spoil, and to take the prey, and to tread them down like the mire of the streets. Howbeit, *he meaneth not so, neither doth his heart think so ;* for it is in his heart to destroy and cut off nations not a few." † Here the ambition and pride of a sovereign give rise to a bold invasion, with a view to national aggrandizement ; but here also is the providence of God, directing the same line of action, with a view to the correction of the Israelites, and the ultimate promotion of their spiritual interests. The conqueror of nations was an instrument wielded by the hand of the Almighty to punish the guilty. But, when the Lord had accomplished His purpose by chastisement, and the time had come for the deliverance of His people from captivity, another mighty sovereign, though a heathen, was employed as a

* Num. xxii., xxiii., xxiv. † Isaiah, x. 5.

minister of mercy. The Lord stirred up the spirit of Cyrus, King of Persia,* to pass a decree of emancipation.

The Jews appear in the same aspect, as charged with guilt by the Apostle Peter, in relation to the crucifixion of our Lord. "Ye men of Israel, hear these words; Jesus of Nazareth, a man approved of God among you, by miracles, and wonders, and signs, which God did by him in the midst of you, as ye yourselves also know: Him being delivered by the determinate counsel and fore knowledge of God, ye have taken, and by wicked hands, have crucified and slain." † The Jews, as persons, were involved in the deepest guilt because of their rejection of the Lord of glory, irrespective of the clearest evidence of His Messiahship; while their enmity was overruled, for the accomplishment of the eternal purposes of God, regarding the death of Christ as the Saviour of sinners.

The testimony of the Apostle Paul is conclusive upon this subject. He represents himself as a person under solemn responsibility, and at the same time, as an instrument constrained to do God's work. "Though I preach the Gospel, I have nothing to glory of: for necessity is laid upon me; yea, woe is unto me, if I preach not the Gospel." He felt impelled by inspiration.

* Ezra i, 1. † Acts ii, 22–27.

He must become an agent in the Divine hand to perform the work given him to do. But, he feels that the reward is related to the spirit in which the work shall be done; hence he adds, "For if I do this thing willingly," that is, as a person—a free agent, having received a commission, and holding it under deep responsibility, "I have a reward, but if against my will"—if merely as an instrument—"then a dispensation of the Gospel is committed unto me." As under the constraint of inspiration, he *must* unfold the Gospel of Christ, though merely as an instrument; while comfort in his work, and the reward of it, must be regulated by the spirit in which, as a free agent, the duty is performed. That the spirit might not be retarded, he watches strictly over the state of the outward man. "I keep under my body, and bring it into subjection; lest that by any means, when I have preached to others, I myself should be a cast-away."

If, then, individuals of the human family, have been specially employed by a peculiar inspiration to perform some special work, in the dispensations of providence, may not the principles embodied in their destination to a special service, be unfolded in the whole development of human genius? If one man in the capacity of a warrior be employed, as an instrument to execute Divine vengeance upon a nation, and if

he be inspired as Gideon was, by the Spirit of God, with skill and courage to accomplish his work. If another is inspired as Cyrus, to grant a decree of emancipation to an enslaved nation. If a third is inspired to proclaim the will of God in regard to the redemption of sinners, on what principle shall we exclude special genius from the category of mental inspiration? The providence of God includes the physical, as well as the moral administration of the affairs of the world. In both, men are employed as instruments, and by a special providence are prepared for their work. In both, there are certain facts unknown to man, which must be revealed, before he can realize their benefit. In both cases there seems to be a similar necessity, for the inspiration of the Spirit of God to reveal the unknown, so that man may ever feel his absolute dependence upon the Universal Governor. This doctrine of mental inspiration shall afterwards be distinctly proved, when considering the scriptural records of the arts and sciences in illustration of our main theory.

Admitting the doctrine of Divine providence universal and special, as restraining, directing, and overruling the actions of men, there cannot possibly be any exclusion, of the triumphs of genius from this universal and special source of causation. Within this exercise of Divine power,

must be included every object, inanimate or animate, natural, or mechanical. In the natural phenomena, all things were made for the glory of God as creator. In the transitions of the natural, and in the development of the mechanical phenomena, all things are destined to show forth the wisdom and goodness of the God of providence. The world as originally made, is but the embodiment of the Divine decrees regarding creation. The world, in its history, and in the transformation of its elements by natural causes, or by mechanical skill, is but the development of the Divine decrees in the progressive dispensations of Providence. The Bible reveals to man vast physical, and social changes, as embraced in the purposes of the Moral Governor. The distribution of genius, and the invention of machinery, are providential means by which these purposes of benevolence shall be accomplished. Both are the gifts of God, coming through the ordinary or special channels of His providence; at once designed to bless humanity, and elicit from the recipients, gratitude and praise to the bountiful benefactor. "Every good gift, and every perfect gift, cometh down from the Father of lights with whom there is no variableness, neither shadow of turning." If, therefore, God is the author of every mental and mechanical gift, irrespective of the species

of instrumentality by which it is bestowed, it must be apparent that these gifts themselves ought to be considered as emanations of the wisdom, and power, and goodness of God. Thus, in the doctrine of Providence, the whole theory which has been previously propounded, finds a solid and capacious foundation. Here, the whole argument might be conclusively settled, seeing that both reason, and revelation, claim for God the glory that is due to His name, from every region of the material world. But in order that it may be clearly manifest that this doctrine is not merely a deduction from reason, or an inference from the doctrine of Providence, we proceed to show that it is a principle fully acknowledged in the Bible; being not only a truth which may be discovered, but a doctrine according to godliness, to be received and applied in all our conceptions of the arts and sciences.

THE BIBLE RECORD OF MECHANICAL PROGRESS, AN EVIDENCE THAT INVENTIONS ARE OF GOD.

The history of inventions is nearly coeval with the existence of man, and the Divine record carries us within the precincts of paradise. That record may be viewed either in respect to what the command of God implied, or the facts in human history, which it has transmitted. In regard to the former, the command to "dress

the garden and to keep it," as well as the command to "subdue the earth," implies the use of implements. Some have supposed that even in Eden, our first parents were furnished with mechanical inventions, suited to their work in dressing and keeping the garden; otherwise their work must have been reduced to the scale of savage efforts. But upon such a question the reasonings of man can only amount to conjecture. Whether God furnished Adam with utensils, suited to his work, cannot now be determined, nor does it lie within the line of argument adopted. But of this there is Scripture evidence, that work was given him to do, and a constitution adapted to, that provision made in the world for the accomplishment of this work. The commission given to Adam respecting the garden, and the world, must have awakened ideas in his mind, concerning the means by which that commission might be carried into execution. Let it be borne in mind that man was made in the image of God, in knowledge, righteousness, and holiness; and being thus made, he could not blindly receive a charge, regarding the means of accomplishing which he could form no conception. In receiving his commission, he was addressed as a person—a moral agent; and consequently, his moral nature responded in accordance with the light then

enjoyed. And what was that light but the effulgence of divinity, beaming upon the heaven-born soul; and reflected upon the field of nature, over which he was constituted legal sovereign? How comprehensive, must necessarily have been his knowledge of that world which he was appointed to govern! Equally comprehensive must have been his knowledge of the means and instruments by which he might perform the work given him to do in the discharge of present duty. But by the fall, the Divine image was lost, the intellectual, as well as the moral nature became depraved. So little remained of the previous knowledge, that when human nakedness was discovered, human ingenuity found in nature nothing better than fig-leaves for a temporary covering. This is the primary fact of mechanical development; showing that man has not only lost the moral capability of obeying the command of God; but also that he has lost the knowledge of nature's elements; and must henceforth be guided even in mechanical operations by the Author of his being.

Even this first attempt at invention seems to be tacitly rejected by offended Deity. The restoration of man, physically as well as morally, must begin with God. The criminal must not appropriate even the least of the blessings forfeited in the violation of the covenant, until di-

rected by Divine example, and recommissioned by Divine authority. In this commission the subduing of the earth is inseparable from human toil ; while God himself gives the first impulse, and presents the first specimens of mechanical operations. "Unto Adam and to his wife did the Lord make coats of skins and clothed them." It is generally supposed that the skins were those taken from the first sacrifices, consequently, the very symbols which instructed fallen man in the mysteries of spiritual redemption, also afforded first lessons upon the elements and means of physical elevation. Does not this clearly indicate that the moral renovation of the world shall be accompanied by a physical emancipation, from much of the evil inflicted by the curse ? In this Scripture record, the mind is led up to the source of mechanical inventions, while God himself is the designer, and the operator. Is not the whole region of artificial phenomena, ennobled by this origin, apparently limited though it be ? Who need be ashamed of honest labor, though humble, when the Author of the universe made coats for man, in the day of his extremity ?

From this example, there is reason to believe that the sons of Adam would in process of time be similarly clothed, and instructed in the mysteries of the sacrificial system. Implements,

and skill to use them, must have been in requisition in the time of Abel, who "brought of the firstlings of his flock, and of the fat thereof" for sacrifice, which could not have been prepared for the altar without some mechanical inventions. Cain was a tiller of the ground, which also implies the invention, and use of agricultural implements. But these records of the early history of humanity are not confined to the first efforts of husbandry, or to the initiatory rites of the sacrificial system. Though the raising of food from a blighted soil, and the spiritual teaching by types and symbols were necessarily among the earliest expositions of the arts, they were immediately accompanied by another invention which lies at the foundation of social progress.

The outcast, Cain, is represented as building and naming a city. We are still within the limits of Adam's family, and yet there is presented an extensive acquaintance with the arts of industry. The idea of a city implies the erection of permanent buildings, and consequently the invention, and use of architectural implements. Though he was a fratricide, and under the ban of heaven an exile from his father's dwelling, the Spirit of God has recorded his first efforts in the founding of those congregated habitations which have exerted so much

influence over the social history of humanity. That God of providence who disclosed in the field, the blood of Abel, and who brought the culprit Cain to condign punishment, yet preserved him as an instrument, giving a new aspect to the world, and the Spirit records him a builder as well as a murderer. The sense of fear which the guilt of his brother's blood, and the sentence of God impressed upon his soul, gave rise to the idea of union for protection. The fortified cities of ancient and modern times are but an expansion of this primitive idea; and thus the guilt of Cain was made the occasion of introducing a system of social polity which has been the guardian of life through ages of barbarism. The Spirit of God, who "knoweth the end from the beginning," has marked the first efforts of genius, though the fuller development has not been made a matter of sacred history. Is not this designed to teach man the minute care of the providence of God, and the relation of all the arts of industry to His moral government?

In the brief history of Cain's descendants, there is a more explicit record of the progress of the arts. Though the name of Lamech—the fifth in descent from the builder of the city—is associated with the invasion of the domestic constitution by the introduction of polygamy;

yet in his family the pen of inspiration has traced the rapid development of the arts and sciences. Of his first-born, Jabal, it is recorded, "He was the father of such as dwell in tents, and of such as have cattle." To be a father, in Scripture language, usually implies the originator, or inventor of some new enterprize. In the time of Abel sheep were kept, but it seems to have been under the hand of Jabal that this primitive calling was reduced to anything like a system, destined to exist from age to age. He is thus represented as the founder of the Nomadic tribes, which, throughout the east, even till the present day, dwell in tents, and pasture their cattle at will, without respect to local boundaries. This aspect of social life arose, in some measure, out of domestic circumstances. So rapid was the increase of the flocks, around a fixed habitation, or primitive city, that, like the herds of Abraham and Lot, the ground was unable to bear them, consequently the scattering of the shepherds gave rise to the necessity of moveable habitations ; and thus was evolved in the time of Jabal, the art of tent making, which was learned by the Apostle Paul about the Christian era ; and which is still the occupation of many in eastern countries.

These inventions of Jabal, the result of necessity, were accompanied by others calculated to

elevate and refine society. The practical sagacity of the shepherd is associated in Holy Writ, with the spontaneous efforts of taste and genius; clearly indicating that man was constituted not only to labor and live upon the productions of nature, as possessing animal life, but also to draw from nature sources of mental elevation and social enjoyment as a rational and spiritual being. The sacred narrative announces, that "his brother's name was Jubal: he was the father of all such as handle the harp and organ." Here were disclosed the grand types of all mechanical harmony. Wind and stringed instruments, in their varied artificial combinations constitute the chief, and embrace in their expansion the whole development of musical machinery. Simple and rude these primitive instruments must have been, in their original construction; but the fact of their existence in this early age, and the recorded notice of the name of their inventor, prove, that even before the wilder notes of the voice of nature, were heard amidst the conflicting elements of that stormy sea of judgment, which encircled the globe; the softer strains of Eden's dying melody were stereotyped by Jubal and his musical descendants. From this name Jubal, it is evident that we derive the term jubilee; and well does the invention of musical instruments accord with the

year of jubilee among the Israelites ; when the trumpet sounds, were the peals of liberty, causing the heart of every slave to thrill with joy. Nor is the record of inspiration devoid of hope for the world, in which the jubilee trumpet of liberty shall yet be sounded, "and the ransomed of the LORD shall return, and come to Zion with songs and everlasting joy upon their heads : they shall obtain joy and gladness, and sorrow and sighing shall flee away."

In the succeeding verse of the same narrative, there is a more general exposition of the arts of industry. "Tubal-Cain was an instructor of every artificer in brass and iron." This son of Zillah, is generally supposed to be the Vulcan of the ancients—that fictitious deity whose name occurs so frequently in classic story. He is not like his brethren Jabal and Jubal, described as the father of those who were his contemporaries, or descendants in the same profession, but as their instructor. Besides, this title is employed in its most comprehensive sense, "the instructor of *every* artificer in brass and iron." It would seem as if he was endowed with a peculiar genius for the special instruction of all his contemporary artificers, in the smelting, and moulding, and mechanical use of these precious metals. At a later period, Bezaleel and Aholiab, inspired by the Spirit, are represented as qualified "to

teach" and instruct others in the mechanical arts. Even in this peculiar case of Tubal-Cain, as recorded by the Spirit, it would appear that there must have been some mental inspiration, by which he was distinguished from all his fellows. How extensive must have been his knowledge of the precious metals, and the purposes to which they may be applied? In this single record there is unfolded an extensive exposition of the founder's art. There is the extraction of the mineral ore—the smelting, mixing, and moulding or beating of these substances into mechanical forms suited to all the varied purposes of agricultural, or social life. There must have been, even in this early age, considerable acquaintance with practical chemistry, accompanied by mechanical skill, ere the mineral ores could be prepared for the artificer, or when prepared, to be rendered subservient to their various purposes. Is not this early discovery of the most useful of all the metals, and the Scripture record of this distinguished mechanic, a testimony to the care with which the God of providence, watched over, and directed the progression of the arts and sciences?

The heathen poets have sung of the golden age, may not Christian poets sing of the age of iron? That age stretches back until at least the period of Tubal-Cain. The history of iron

is associated with the progress of mechanical inventions, and the civilization of kingdoms ; and never were such triumphs of genius realized as those which in modern times have been effected by its instrumentality. From the least to the greatest of mechanical inventions, it finds a place either as embodied in, or giving form to, every implement. Though not usually esteemed one of the precious metals, its value to man exceeds that of all others. None else could supply its place ; and were its precious ores exhausted, universal paralysis would arrest mechanical progress. The whole history of mercantile and social life would be completely transformed. The existence of this single mineral, and the large proportion it bears to other minerals, taken in connexion with its relation to the present condition of man, must convince even the sceptic that it has been created and deposited by a God of infinite wisdom and boundless beneficence. This argument, addressed to reason, is confirmed by revelation, which at once unfolds the creative power and providential care, of the sovereign Ruler. This family of Lamech was not within the line of the antideluvian Church, neither is the exposition of the arts in that family presented in immediate relation to the development of the covenant of grace ; but yet the Spirit of God has recorded both the

names of the inventors and the departments of art in which their skill was exercised, in order to show with what care the God of providence watches over His creatures, and also their common operations in the field of nature. Besides, it seems apparent, from such incidental records of inspiration, that God will honor those who honor Him, even in common things, by displaying the riches of the earth, which are but the material embodiment of the Divine decrees of wisdom and goodness. There seems in the human constitution a native principle, which constrains man to look above and beyond himself in mechanical operations. The ancient heathen world, having lost the key of knowledge, attributed their achievements in art to their fictitious deities; but the Bible, by revealing the relation in which God stands to the world and to its inhabitants, as its Creator and Governor, claims for Jehovah the praise of all His works. Thus the Psalmist, responding to this claim, invokes not only the homage of angels and of saints, but also the silent homage of creation work in all its departments. "Bless the LORD, *all* His works, in *all* places of His dominion; bless the LORD, O my soul!"

In the rapid degeneracy of the human race, the command, "*Subdue the earth*," was forgotten, while human depravity displayed itself in

the attempts of the strong to overcome and subdue the weak. The giant strength of the mighty, instead of being employed, as in the beginning, with agriculture or art, was made the instrument of unparalleled violence. "God saw that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was only evil, and that continually. The earth also was corrupt before God, and the earth was filled with violence." There is little doubt that the rapid progress of the arts in the previous age, as associated with universal corruption, would become a curse, instead of a blessing. The violence of human depravity would be rendered more violent through their instrumentality. But the Flood, as a judgment from God, cut short that reign of terror, and swept away all the apparatus of former tyranny. The ark alone survived the storm of Divine wrath, and rested upon Ararat, the memorial of providence and grace. But in the ark, as well as in the experience of its inhabitants, the world, emerging from a second chaos, possessed a comprehensive stock of mechanical knowledge. This is apparent from the history of its construction. This refuge from the flood was not created, but made by human hands, in accordance with a Divine plan. "Make thee an ark of gopher-wood: rooms shalt thou make in the ark, and

shalt pitch it within and without with pitch. And this is the fashion which thou shalt make it of: the length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits. A window shalt thou make to the ark, and in a cubit shalt thou finish it above; and the door of the ark shalt thou set in the side thereof; with lower, second, and third stories shalt thou make it." This commission furnishes clear evidence of the progress already made in the mechanic arts. From the tenor of this announcement, it is apparent that the geometrical proportions were already understood—that doors and windows, or openings for light, ventilation, and entrance, had been usually framed—that first, second, and third stories had been previously constructed—and that pitch had been employed in conjunction with wood to resist the action of wind and water. Had the whole work been original, like the Tabernacle, then specific directions and explanations would have been absolutely necessary. But in this case, the language is such as would be addressed to any contractor acquainted with the elements and mode of operation necessary in the accomplishment of a given work. Indeed, it would seem from the narration that Noah must have had some acquaintance with the art of navigation, or at least with the fact that a

building of wood could be so constructed as to float upon the waters. In this case, the vessel constructed was not designed for crossing the mighty deep from shore to shore, but for holding out amidst the warring elements, and floating upon the bosom of the earth-encircling ocean, consequently the plan was not only original, but Divinely communicated. Thus, in the goodness of God, while the deluge was reducing the world to a state similar to that in which it was found as occupied by Adam, in respect of population, and while the curse had now taken fearful effect upon the physical globe in this dread outburst of Divine wrath, provoked by sin, the education of the human family in religion, in morality, and in scientific knowledge, was gradually progressing. All the skill acquired by Noah and his family in building the ark was transferred directly to the postdiluvian world; while far above the tide-mark of ocean's future boundary, and the most elevated region of agricultural enterprize, stood the ark upon Ararat—for the study of future generations—the model of architecture in its construction, and the embodiment of naval science in its history. Thus it appears that the history of the postdiluvian world started from a much higher altitude than that of the world into which fallen Adam was cast out. It would seem that the congregating

of the animals and fowls within the ark, and the time during which they were entrusted to Noah's care, were designed to renew that acquaintance with their nature, habits, and uses which man had lost by the loss of dominion, but which was now rendered necessary by the renewal of his original charter. The sagacity which was intuitive in Adam, when he gave them their names, could only be realized by his fallen descendants through persevering study and observation. Viewed in this light, the ark appears as combining all the elementary principles of a school of art, a school of natural history, and a school of experimental navigation ; while the raging storm, and the swelling flood, were the awe-inspiring teachers of a heavenly morality. Nor was the Church without her form, as well as her existence. The most distinguished theologian of the age, even the "preacher of righteousness," was there at the head of authority, to expound the mysteri ous events of Providence, and to dispense the ordinances of redeeming grace.

No sooner had the exercises of the ark been concluded, than an altar was erected, on which were sacrificed burnt-offerings, at once expressive of faith in the atonement, and gratitude for deliverance. With this observance is connected the restoration of man to dominion over the creatures ; and from this point in human history

may be traced a second time the rise of science and art. The charter of privilege forfeited by Adam was renewed to Noah. The breadth, and benefits of this charter, gave a mighty impulse to the arts and sciences. There was a grant of land, co-extensive with that which was bestowed upon Adam. "God blessed Noah and his sons, and said unto them, Be fruitful, and multiply and replenish the earth." There was also a corresponding grant of dominion over the irrational creatures, of which it was said, "Into your hands are they delivered;" while upon each and all the fear of man was impressed. But they were delivered into his hand, not only to be ruled, but to be used, both for service and sustenance. "Every moving thing that liveth shall be meat for you, even as the green herb have I given you all things." Here, then, is the Divine warrant for the construction of machinery from, and for the general use of, the productions of the mineral, vegetable, and animal kingdoms. Consequently, when in the exercise of skill, and by the aid of mechanical inventions, we obtain from the earth the necessaries, conveniences, and luxuries of life—when we discover the hidden treasures of the globe, and appropriate them—when we abridge distance, by quickening the means of transit—when we use material elements in the transmission of knowledge—when

to sum up all—we go to this threefold kingdom and discover its secrets—when we unfold and appropriate its latent powers—when we develop its treasures, and distribute them—when, as commissioned vicegerents, we take our seat upon the throne of nature, and rule for the glory of the universal Governor, *then it is that genius* and industry perform their mighty work, and fulfil their original destiny—*then it is* that man becomes alive to the extent of his legitimate privileges, and, stimulated by the exhaustless munificence of nature's resources, he obeys, by constraint as an instrument, or willingly as a moral agent, the primary and renewed commission, "SUBDUE THE EARTH, AND HAVE DOMINION OVER IT."

Thus Noah, on leaving the ark, with this renewed commission, "began to be an husbandman, and he planted a vineyard." This was the restoration of the arts of industry—the source from which may again be traced the rise of mechanical inventions. Within a century after the flood, the arts were again found flourishing in the erection of munificent cities, and the subduing of irrational creatures. "Nimrod was a mighty hunter before the LORD." But he was also "a mighty one in the earth," founding kingdoms and erecting cities. It would seem as if his skill in hunting and in building had given

him the ascendency over his fellow-men, for he is represented as the founder of monarchy. "The beginning of his kingdom was Babel, and Erech, and Accad, and Calneh, in the land of Shinar." When his project, to rule all the sons of Noah by concentrating one universal dynasty, was blasted, he enriched other lands by his architectural example. To the genius of Ashur, another great builder, Nineveh, and Rehoboth, and Calah, and Resen, in the land of Assyria, owe their architectural greatness as ancient cities. Why have their names been preserved in connexion with their founder? Is it not to show the progress of the arts, and their influence upon the formation of ancient empires? This, again, is a part of the Divine plan in ruling the human family; consequently, the arts take their appointed place in the vast and comprehensive plans of Providence.

The erection of the Tower of Babel was at once a record of mechanical progress in the post-diluvian world, and the memorial of a peculiar crisis in the history of humanity. In that building there was an extensive exposition of the arts. Brick, prepared from clay of Shinar, substituted for stone, and bituminous pitch for mortar. The plan was novel, and the design of the tower directly opposed to the command, "Multiply, and replenish the earth, and subdue it:"

yet for a season the work prospered. According to tradition, three years were spent in preparation of materials, and twenty-two in building, ere the day of confounding judgment came. Mark how the spirit of inspiration records the arrest put upon this display of human genius: "The LORD came down to see the city and the tower which the children of men builded." This language is after the manner of men, but the design is to teach us that God watches over, and takes cognizance of, the enterprizes and operations in which men are personally and socially engaged, as well as the motives and principles by which they are actuated. In this notice of mechanical progress, there is no condemnation of the postdiluvians for building a city, or erecting a lofty tower; but the object of both was to concentrate the human family under one dynasty, to foster human pride, and increase sovereign power, and thus to frustrate the expressed purpose of God to "replenish and subdue the earth." "Go to," said the projectors of this enterprize, "let us build us a city, and a tower whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth." "Go to," says the moral Governor, "let us go down and there confound their language, that they may not understand one another's speech. So

the LORD scattered them abroad from thence upon the face of all the earth." The evil so much dreaded was imaginary, but the means employed to prevent it hastened its approach. If they would not, as moral agents, acknowledge the Divine authority, they must, at least, as instruments, accomplish His purpose. "There are many devices in a man's heart, nevertheless the counsel of the LORD, that shall stand."

In the history of Abraham there is an incidental record, showing, that the balance had been introduced, with a view to commercial intercourse. In payment of the field of Machpelah purchased for a burying place from the Hittite, "Abraham weighed to Ephron the silver . . . . four hundred shekels of silver, current money with the merchant." Now, God distinctly claims the balances as His own in the book of Proverbs. "A just weight and balance are the LORD's, *all the weights of the bag are His work.*" Were they not devised and formed, and adjusted by human skill? As the products of human genius, how can they be considered as the LORD's work? Just in the way already explained. He created the materials of which they were made. He implanted the skill by which they were invented, formed, and adjusted: consequently the work is His—though made subservient to the purposes of social life by an intermediate agency—as

really as though they had been the products of immediate creation.

While God thus claims individual objects and instruments, there are general statements in the Bible designed to direct all our inquiries regarding inventions to the same source. The greatest achievements of human genius are but the reflection of that wisdom which is infinite, and that power which is almighty. How conclusive is the language of inspiration, "I wisdom dwell with prudence, and find out knowledge of witty inventions." Many theologians seem to think that this declaration has respect to the work of salvation only. It is usually applied to Christ in respect to that knowledge by which He found out, the expedient of human redemption. "Fallen men have sought out many inventions for their own ruin, but He found out one for their recovery." It is evident that Christ is the speaker in the passage, and that to him only can belong the title assumed, and the language uttered. But we apprehend that He is not here speaking directly of either the plan propounded, or the means employed in the execution of redemption work. This aspect of the subject is clearly brought out in the closing section of the chapter; where He unfolds His appointment as surety from everlasting, and His own "delights as with the sons of men." But in the section

from which we have quoted, the subject clearly is, the administration of the Kingdom of Providence in which He represents Himself, as the embodiment of wisdom and strength. "Counsel is Mine and sound wisdom, I am understanding; I have strength. By Me kings reign, and princes decree justice. By Me princes rule, and nobles, even all the judges of the earth. . . . Riches and honor are with Me; yea, durable riches and righteousness. . . . . I lead in the way of righteousness, in the midst of the paths of judgment, that I may cause those that love Me to inherit substance; and I will fill their treasures." Thus, the dominion of Christ, as Mediator, appears as embracing all things for the good of His Church. By the fall, man lost his original wisdom, as well as his original dominion over the creatures. The grant of inanimate, and animate creation for his use, was forfeited by apostacy. The service which he obtains from the creature is by constraint; nay, they are frequently turned by God into instruments of destruction. But the original grant was renewed to Christ, as head of the Church for her benefit. This appears from the eighth Psalm, and from the grant contained in it being applied to Christ by the writer of the Epistle to the Hebrews. "For unto the angels hath He not put in subjection the world to come, whereof we speak. But

one in a certain place testified, saying, What is man, that Thou art mindful of him ? or the son of man, that Thou visitest him ? Thou madest him a little lower than the angels ; Thou crownedst him with glory and honor, and didst set him over the works of Thy hands : Thou hast put all things in subjection under His feet. For in that He put all in subjection under Him, he *left nothing that is not put under Him.* But now we see not yet all things put under Him ; but we see Jesus who was made a little lower than the angels for the suffering of death, crowned with glory and honor."

The Church is destined to embrace the world. Mechanical inventions have had a vast influence upon the Church, and are designed to ameliorate the condition of the human family during the period of millennial glory. If the creatures, inanimate and animate are given to Christ for the good of His people, it is evident that the employment of these creatures must be directed by Divine wisdom. Fallen humanity is as destitute of the knowledge to discover their use as it is of the right to their appropriation. But while the right is restored to Christ, as universal sovereign, ruling as Mediator over all things for the Church's benefit, the knowledge of witty inventions must emanate from the same source. Is not this the import of the passage already

quoted? It is not the design of the Bible directly to solve the problems of science, nor to define in detail the works of art destined to be brought into operation. But it reveals the dominion of Christ over all temporal things, and His infinite wisdom as developed in their regulation. The mental powers, assuming the aspect of sagacity or prudence, are as much the gift of God as the materials upon which they are displayed. But it is wisdom dwelling with them —controlling, directing, and leading them on to discovery and invention that must be recognized as the source of all mechanical phenomena. Will any believer in Bible truth be prepared to say that the intellectual powers—ordinary or peculiar—are not emanations from the fountain of all wisdom? If they are not of God, then, whence are they? Is there any other source—celestial or terrestrial—to which they can be traced? Are they self-created? Do they operate by chance? Reason rejects the very supposition. Revelation reveals to reason the fountain of Divine wisdom as the primary source—

"The deep shaft, out of which they spring eternally."

"Let not the wise man glory in his wisdom, neither let the mighty man glory in his might, let not the rich man glory in his riches: but

let him that glorieth glory in this, that he understandeth and knoweth me, that I am the LORD." As He makes the sun to rise upon the evil and the good, and sendeth rain upon the just and the unjust, so in the dispensations of providence, He sheds the light of genius, and bestows the power of invention upon whomsoever He designs to employ in accomplishing the Divine purposes. Nor are those blessings realized through the agency of man less the gift of God than though they had come through the ordinary course of nature.

Nay, we would venture to press the argument farther, and show that these channels of Divine communication are more wonderful than those opened up in the ordinary course of nature. In the latter case we have inanimate objects acted upon at all times, in all circumstances, and in all combinations by the immediate power of Deity, exercised through the medium of certain constitutional principles ; the universal experience of which has given rise to the term natural laws. But, here, there is no mental operation distinct from the will of the Divine Author. The mineral kingdom possesses its shining ores, and brilliant pearls, and crystalline diamonds. Incessant changes are being effected among all its elements. But throughout its entire regions, there is no life, nor thought, nor mental capa-

city. Thus it is also in the vegetable kingdom. The flower blooms, and emits its fragrance, while utterly unconscious of the first elements of vegetable life or beauty. The cedar spreads its majestic arms towards the heavens, and in its season yields its goodly fruits, but of its own existence, or of any other, there is no conception. The corn of wheat falls into the furrowed grave, springs into the blade, and the full ear, for the use of man; but it reaches not the lowest form of animal life. The soil awakens its latent germs, the dew refreshes its earth-born blade—the winds of heaven fan it—the rays of light nurse it; the currents of electricity stimulate its growth, but like itself, they are each and all destitute of physical life and intellectual capacity. These are constituted, the natural sources from which animal and rational life is sustained; but how limited their agency, under the effects of the curse, in supplying the wants of the human family! Stop with nature—reject the appliances of art—leave all for the operation of these agencies, and the world will soon become a region as destitute of human life as that on which God commanded the light to shine forth in the morning of creation!

But here the God of providence has brought into operation another class of agencies—the "witty inventions" by which man obtains from

the field of nature the treasures deposited in infinite goodness. By the aid of mechanical inventions the earth is subdued, and its stores rendered available for the use of humanity. It is evident, however that the simplest machine cannot be produced without a reflecting mind. The reflecting mind cannot be produced without the creating power of a Being at once the fountain of life, and possessing the attributes of infinite wisdom. Thus, while the channels in nature are opened by physical causes, the powers of appropriation are furnished through the union of a physical and mental agency. In the one case, God operates by inanimate objects, in the other, by living, reasoning, reflecting, and immortal beings. To work by natural laws, proves the wisdom and power of God, by whom these were engraven upon material elements. Is that power less apparent, or that wisdom less conspicuous, when creating a mechanical agency, inhabited and impelled by an invisible Spirit? Are we to see more of the Divine Author in the material elements of the world of matter, than in the development of sentient humanity? Is it consistent with reason to recognize God in the process of nature by which the wheat was prepared for food, or the flax for clothing, and to reject every idea of God in connexion with the human inventions by which these were ren-

dered available for our sustenance and comfort? Will we acknowledge the Divine hand in preparing the luxuries of the eastern clime, and yet reject every sense of His relation to the construction of the ship, or the nautical skill by which they were brought to our sea-girt island? Shall we recognize God in the gloomy metal dug from the deep mine, and disown Him in the genius of a Watt or an Arkwright? Shall we behold the symbols of this power in the stately elms of the transept, and yet look upon all the wonders of the Crystal Palace, and forget that He created a Stevenson and a Paxton? Nay, it is here that we are invited to contemplate *a fuller, richer, and more glorious display* of the wisdom, power, and goodness of God, in creating man with such capabilities. Though fallen from his pristine dignity and glory, he is permitted to retain his place as a worker together with God, in re-arranging and re-distributing nature's riches, in adaptation to human necessities. Have we not here the most wonderful display of the Divine attributes—redemption work excepted—to be found in our globe? The material clay united to the pure spirit, and thus constituted a sentient being, sent forth to discover the vast resources of the world, and, by mechanical inventions, to appropriate and use them.

If in the arts of industry we see the evidence

of human wisdom, and the proofs of design, how vast is the field of contemplation, when viewing these, not only as types of mental power, separated from conceptions of the Deity, but when we see the human body and the human mind, in all this mechanical and intellectual development, as but the faint types of that mind which contrived the universe, and made the earth, in adaptation to man, before he had a being. True it is, that the eye of faith which looks to heaven, when it turns again to natural or artificial phenomena on earth, seems to bring down with it a purer radiance, like the very beaming of the presence of Divinity, which it sheds upon every object. The mental eye, thus illuminated, gazes upon every subject in the kingdom of Providence, encircled in a halo of glory. That is the true philosophy of nature which leads the mind direct to the fountain of causation, and that is the genuine mental philosophy which traces all legitimate knowledge to the source of infinite wisdom. This philosophy is little understood, and still less acknowledged, in the past history of human progression. But being a philosophy pervading all nature, the grace of God shall yet quicken it into universal life and power in the human mind. Let men but come within the "shadow of the Almighty," realizing on every side a present Deity, and then nature,

providence, and grace, will be found in close connexion and absolute harmony. The lofty strains of poetic inspiration, as breathed by Cowper, shall become a reality in the every-day experience of man.

"One spirit His,
Who wore the plaited crown with bleeding brow,
Rules universal nature—
The soul that sees Him, or receives, sublimed,
New faculties, or learns at least to employ
More worthily the powers she owned before;
Discerns in all things, what with stupid gaze
Of ignorance till then she overlooked.
A ray of heavenly light gilding all forms
Terrestrial, in the vast and the minute;
The unambiguous footsteps of the God
Who gives its lustre to an insect's wing,
And wheels his throne upon the rolling worlds."

CHAPTER V.

THE INSPIRATION OF GENIUS AN EVIDENCE THAT MECHANICAL INVENTIONS ARE OF GOD.

THE agency of the Holy Spirit is generally considered in its relations to the moral world, and its immediate operations upon the soul in regeneration and sanctification. Many, while contending for the personality and divinity of the Holy Ghost, seem strangely to overlook His modes of operation in the Church and the world, prior to the advent of the Son of God. The language used by many divines and expositors, in expounding the Old Testament Scriptures, seems to accord with the reply of certain disciples whom Paul interrogated regarding their experience of the Spirit's influence: "We have not so much as heard whether there be any Holy Ghost." It is true that the New Testament economy is peculiarly the dispensation of the Spirit. To the Christian Church He was promised as the "Spirit of truth," to testify of Jesus, and as "the Comforter," to impart con-

solation. Upon the primitive Church he was poured out in a copious measure. In the doctrines of the Gospel He is exhibited as applying the benefits of that redemption which Christ has purchased. In consequence of this fuller revelation regarding the work of the Spirit, and especially in consequence of the tendency of modern divines to dwell chiefly upon the New Testament, and to treat the Old as if it were a piece of antiquated history, the agency of the Spirit, in all that preceded the Christian era, is comparatively forgotten. But both Testaments form only one Bible, regarding the revelation of the Divine will contained in which it is declared, that "all Scripture is given by the inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction, in righteousness."

Both Testaments are replete with doctrinal statements and historic records regarding the operations of the Holy Spirit. In the old creation, and in the new, He occupies a place personal and peculiar. The works of God are either *natural* or *gracious*. To both the Spirit stands in close relation. The opening sentence of the Bible, recording the act of creation, is succeeded by one recording the operation of the Spirit. "The earth was without form, and void; and darkness was upon the face of the deep: and the Spirit of God moved upon the face of

the waters." The whole matter being created, out of which the globe should be fashioned, and from which all living creatures were soon to be educed, He assumed its preservation, and cherished its elements, that, having its subsistence by the power of the Word of God, so it might be reduced to that form, order, and beauty, predetermined in the eternal counsels. It seems, from the form of expression employed, that He communicated unto the elements of the globe a quickening and prolific virtue by which, at the command of God, vegetable and animal life, in every varied form, sprung into existence. This agency, which was ascribed to the Spirit, in the act of creation, is still ascribed to Him in the continued dispensation of Providence. Thus, while the Psalmist represents the decay of nature by death, the revival of nature is attributed to the Spirit's influence. "Thou sendest forth Thy Spirit, they are created; and Thou renewest the face of the earth."

In the creation of man there was a twofold operation—the forming of the body, and the inspiration of the soul. "The Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul." In this act of the Spirit, there is the introduction of the moral principle, in relation to a world which had previously been

a chaos, destitute of light and life. There was here evolved a physical good, and a moral good —a world fitted and furnished for the habitation of a rational being, and that being constituted so as to stand in close connexion with that physical world; nay, more, to unite in his person mind and matter. Man forms the connecting link between the irrational creatures and holy angels. He was formed of the dust physically, and made in the image of God spiritually. At this stage of human history there were unfolded two aspects of the Divine government—a moral good, having respect to man, and a physical good, having respect to the world in its future history, as made subservient to his interests. To both these aspects of the Divine government the Spirit is closely allied, and in both the Bible represents Him as the permanent operator. The physical world is so constituted as to minister to the moral, consequently, the events of Providence must ever have produced their influence upon the character of man. Thus, while the Spirit has a special and peculiar operation in forming and endowing this moral agent, man is constituted a permanent physical operator, by which the world, in its elements and creatures, is made subservient to the interests and happiness of the human family.

The fall of Adam, by transgression, produced

a moral chaos in the soul of man, which was accompanied by a shock of judgment that reached not only his corporeal system, but produced a revolution throughout the entire physical system of that world and its creatures, over which he had obtained dominion. The earth and its inhabitants, under the curse, appear in a state of universal schism. The lord of creation, having lost the centre of moral attraction by turning to the creature, has also lost the sceptre of moral power, and dominion. The creatures—the very elements of nature, are armed against the rebel king. The "creation groaning" proclaims human guilt, and if unrestrained, would execute the vengeance of God upon its author.

But here again, the Spirit of God is revealed in Scripture as engaged in a twofold operation. That which has respect to nature, and that which has respect to grace. The world itself is not abandoned, though man has fallen. The same Spirit that operates in the plan and application of redemption is incessantly operating in the physical world, and its inhabitants, for the accomplishment of the Divine purposes. That Holy Spirit who is restoring to order, the moral chaos in the renewed soul, is also restoring to order the universal chaos of this revolted region inhabited by man. In the one department spiritual means are universally employed. In

the other, physical and mental instrumentality are brought into operation. In the work of redemption the Son of God was the mighty agent. In the restoration of nature's harmony, the sons of men are employed as instruments. In the assumption of our nature by incarnation, the holy humanity of Christ was formed, and filled by the Holy Spirit without measure. In the creation of successive generations, the constitution of man, physical and mental, is formed, and endowed with intellectual gifts by the Spirit of infinite wisdom. "There is a spirit in man; and the inspiration of the Almighty giveth him understanding."

It seems clear, in the light of Scripture, that there is nothing excellent amongst men, whether absolutely above the production of natural principles, or whether it consists in a peculiar enlargement, and improvement of those principles and abilities, that is not ascribed to the agency of the Holy Spirit, as the immediate operator, and efficient cause of its production. That which results from the common operations of the Spirit, however extraordinary in degree, is entirely distinct from those influences which are gracious and saving. Thus, a man may be employed in distinguished service as an instrument while he is absolutely guilty as a person or moral agent.

In regard to those gifts which are altogether extraordinary, and in their very nature absolutely beyond the limits of man's mental constitution, however highly improved, it may be observed that these have a direct and immediate bearing upon the development of the plan of salvation. The gift of *prophecy* lies beyond the compass of man's finite nature. But "Holy men of old spake as they were moved by the Holy Spirit." The writing of the Scriptures falls within the same category. Many prophesied who never wrote, for "all Scripture is given by the inspiration of God." The power of working miracles was realized from the same source. Even the Redeemer of men, gave these as the seal of heaven, attesting His doctrine. "If I, by the finger of God, cast out devils, no doubt the kingdom of God is come upon you." Such were all the signs and wonders wrought by Moses, by the prophets, and by the apostles, for these were exhibited as pledges and tokens of the Spirit's presence, by whom their message was communicated, and their miraculous power imparted. In the earliest record of supernatural power as bestowed upon Moses, the very magicians of Egypt were constrained to admit the reality of that power, and to acknowledge the source from which it was derived. "The ma-

gicians said unto Pharaoh, This is the finger of God."

But there is a second class of the Spirit's influences and operations which consist in the expansion and exaltation of those mental and physical powers which are common to humanity.

INSPIRATION OF GENIUS FOR LEGISLATION AND GOVERNMENT.

The special influence of the Spirit in preparing men for *legislative* and *political* administration is minutely recorded. The glory of God, and the good of mankind, were deeply involved in the institution of civil government. Destitute of this ordinance, the whole world would be filled with violence, and the human family would soon be thrown into inextricable confusion. In the establishment and exercise of judicial authority, the best gifts require to be improved, and even the best of ordinary gifts are found insufficient to restore order out of political chaos. Thus, when the God of infinite wisdom would organize a model nation out of the rude elements of a long enslaved people, the Holy Ghost inspired Moses with wisdom and courage to conduct their emancipation from Egypt, and to initiate them in the elementary principles of political economy. In the first institution of the

Sanhedrim, or court of seventy elders, to bear in conjunction with Moses the burden of the people, in their rule and government, the Lord is said to "put His Spirit upon them," and again it is said, that the "Spirit rested upon them." "And the LORD said unto Moses, Gather unto me seventy men of the elders of Israel, whom thou knowest to be the elders of the people, and officers over them. . . . And I will take of My Spirit which is upon thee, and will put it upon them; and they shall bear the burden of the people with thee. . . . And the LORD took of the Spirit that was upon Moses, and gave it unto the seventy elders, and the Spirit rested upon them." Previous to this appointment, the spiritual influence was concentrated in Moses as the sole ruler of the people, whereas now, that the government was divided among a number of individuals, it was requisite that each should be duly qualified, and furnish some evidence that he was commissioned by Divine authority, hence it is said that, "when the Spirit rested upon them, they prophesied, and did not cease."*

Again, when God organized a limited monarchy in room of the Sanhedrim, and of the judges, there was a special communication of the Spirit to him who was chosen as the first

* Numbers, xi.

sovereign. Regarding Saul, it is said, that "God gave him another heart; that is, as afterwards expressed, "the Spirit of God came upon him, and he prophesied." He was, by the special influence of the Spirit, endowed with that wisdom, and energy, and magnanimity, which were essential to the proper exercise of magisterial authority. The anointing with oil at the inauguration ceremony, when the kings of Israel were set apart to public office, was a symbol of the communication of the gifts of the Holy Spirit. So great is the burden of responsibility under which a just and righteous government is laid—so numerous are the temptations to which the exercise of authority gives rise, that even the best of men without the special assistance of the Spirit, will be found ready to sink under its weight, or to mismanage its administration. This sense of responsibility and human incapacity overwhelmed the spirit of Solomon, though trained by circumstances, in the family and court of David, to the exercise of legislative and judicial functions. Consequently, when he had the Divine grant of whatsoever he should ask, the right discharge of official duty lay nearest his heart, hence the petition for wisdom—"I am but a little child: I know not how to go out or come in. And Thy servant is in the midst of Thy people which Thou hast chosen, a great

people, that cannot be numbered nor counted for multitude. Give, therefore, Thy servant an understanding heart to judge Thy people, that I may discern between good and bad: for who is able to judge this Thy so great a people?" In answer to this petition, the Divine response is most significant—"The speech pleased the LORD that Solomon had asked this thing. And God said unto him, Because thou hast asked this thing, and hast not asked for thyself long life; neither hast asked riches for thyself; neither hast asked the life of thine enemies; but hast asked for thyself understanding to discern judgment; Behold, I have done according to thy words; So, I have given thee a wise and an understanding heart, so that there was none like thee before thee, neither after thee shall any arise like unto thee." We shall have occasion afterwards to consider how this communication of wisdom and understanding displayed itself in science, and art, and literature, as well as in government.

These special gifts were not confined within the limits of the Church. In the case of one heathen monarch, the inspiration of the Spirit is recorded, as preparing him for the special work to which God had appointed him. Cyrus was chosen by name, and in the prophecy of Isaiah, God calls him His "anointed," for Cyrus

had a special work to accomplish, for which he needed special qualifications. The work in one aspect, had relation to human history—for he was made the executioner of Divine justice upon Babylon—while on the other hand it was closely allied to the Church—for he was the appointed instrument to deliver the captive Israelites. Though he was in himself but a "ravenous bird of prey," he was especially endowed as an instrument to effect the purposes of God. "Thus saith the LORD to His anointed, to Cyrus, whose right hand I have holden to subdue nations before him, and I will loose the loins of kings to open before him the two-leaved gates. . . . . For Jacob, My servant's sake, and Israel Mine elect, I have even called thee by thy name; I have surnamed thee, though thou hast not known Me. . . . . I girded thee though thou hast not known Me."* Thus, the administration of Cyrus had special reference to the Church, though he was not within her pale, and though he knew not the Holy One of Israel. "The LORD stirred up the spirit of Cyrus, king of Persia, that he made a proclamation throughout all his kingdom, and put it in writing, saying, Thus saith Cyrus, king of Persia, All the kingdoms of the earth hath the LORD God of heaven given me, and He hath charged me to build him an house

* Isaiah, xlv. 1–5.

in Jerusalem which is in Judah; who is there among you of all His people? The LORD his God be with him, and let him go up."* Thus Cyrus was divinely qualified as an instrument, though in a state of condemnation as a person, and thus we apprehend that many distinguished conquerors, and renowned deliverers have received special inspiration though unconscious of the fact, and though considering themselves as the source of that wisdom and ability in the exercise of which they had conquered nations, and reigned in earthly glory. Nay, more, seeing that the affairs of the world are regulated with a special view to the Church, and that Christ is constituted head over all "principalities and powers" for her benefit: and seeing that the rise and fall of nations is preparing the way for the full establishment of His visible kingdom, is it not evident that the Spirit of God is from age to age endowing special instruments for special work, as really as He did Cyrus for the infliction of judgment upon Babylon, and the administration of mercy to the captive Israelites? Alas! that in the infidelity of our hearts, we are so prone to contemplate the most distinguished talents as if they had sprung of earth, and to view their application in relation to the creature only; whereas, by these recorded examples, the

* Ezra, i. 1, 2.

human mind is taught to recognize the gifts of the Spirit, and to adore that God who reigns as moral Governor, and who makes even the wrath of man to praise him!

INSPIRATION OF GENIUS FOR WAR.

The existence of war is demonstrative evidence that man is fallen. In itself it is evil, only evil, and that continually. But in the moral government of God, it is at times as necessary as the existence of civil government. Civil magistracy being "an ordinance of God," the girding on the sword is as necessary, in peculiar circumstances, as the wielding of the sceptre The Bible bears testimony to the connexion of the Spirit's influence with special warriors and special victories. "Blessed be the LORD my strength," says David, "which teacheth my hands to war, and my fingers to fight." There seems not a shadow of doubt that the moral courage wherewith he met the Philistine was an inspiration from on high. The names of David's chief warriors, to the amount of thirty-seven, are given in the sacred volume, not we presume, because of their delight in war, or of their deeds of martial prowess, but because they were endowed by the Spirit with extraordinary strength and valor to execute vengeance upon the enemies of Israel. What is said of one of

these, regarding the slaughter of the Philistines, is in fact true of all. They conquered, but it was "the Lord who wrought a great victory." But there is no room for conjecture or inference regarding inspiration of genius for war, when the sacred volume explicitly reveals the doctrine. Of such men as Othniel, and Gideon, and Jephtha and Samson, it is said, "the Spirit of the Lord came upon them." Of Othniel the record is, that "the Spirit of the LORD came upon him ; and he judged Israel *and went out to war.*" Of "Gideon and Jephtha, it is intimated previously, that they were men of valor," consequently, the coming of the Spirit of God upon them must imply that their natural gifts are peculiarly enlarged, and their natural courage excited and sustained amidst the dangers to which they were exposed, in the field of conflict. Besides, it seems evident that they experienced an efficacious impression of His power upon them, by which their call to the work was confirmed, and the confidence of those whom they led to victory stimulated by the conviction that God was with them. The degree of influence seems at times peculiarly adapted to the danger and difficulty of the work to be accomplished. Such were the gifts bestowed upon Samson. His bodily strength was supernatural—an immediate effect of the power of the Spirit—while his mind

was endowed with courage unknown to the human species. In the record of his victory over the lion, which "he rent as he would have rent a kid" without a weapon in his hand, it is said that, "the Spirit of the Lord came mightily upon him." When he went down to Askelon and slew thirty men that he might obtain their changes of garments, the influence imparted is expressed in less emphatic language. Like that, which has been noticed in the case of the distinguished judges who went out and conquered at the head of their respective armies, it is said, "the Spirit of the Lord came upon him." But, when the Philistines shouted against him, as bound at Lehi, "the Spirit of the LORD came *mightily* upon him," so that "the cords became as flax burnt with the fire," and one thousand of the enemies of Israel fell by his hand, smitten "with the jaw-bone of an ass." Is there not here evolved the fact, that the measure of influence is granted, in accordance with the difficulty and magnitude of the work to be done, or the deliverance to be achieved? Can we possibly—with these examples Divinely recorded—read the pages of human history, and not recognize the inspiration of that patriotism and philanthropy, which have led the most distinguished victors to risk their lives in defence of the rights of humanity and the liberty of nations?

INSPIRATION OF GENIUS, MECHANICAL OR SCIENTIFIC.

This species of inspiration belongs to the same category as that which is unfolded in legislation and warfare. To this inspiration the whole development of artificial phenomena may be traced. The care with which Providence watches over, and the particularity with which the Spirit has recorded some of the earlier inventions, has been already noticed. The object now is, to prove directly the communication of intellectual gifts by the Spirit, to be exercised about physical elements, and to be embodied in mechanical inventions.

THE TABERNACLE.

The construction of the Tabernacle is at once a proof and illustration of the inspiration of mechanical genius. God Himself is represented as the Divine Architect. He contrived the mysterious plan, furnished the materials, through the instrumentality of His people, raised up the artificers in the dispensations of His providence, and qualified them for their work by the inspiration of the Spirit. The command to make a sanctuary is accompanied by a description of all its parts. "And the LORD spake unto Moses, saying, Speak unto the children of Israel that

they bring Me an offering: and let them make Me a scantuary, that I may dwell among them. According to all that I shew thee, after the pattern of the tabernacle, and the patterns of all the instruments thereof, even so shall ye make it." It appears from the sequel that the entire plan was Divinely propounded. Not merely the dimensions of the fabric, as formerly in the building of the ark, but every part was described in its relative proportions and special aspect. The curtains, the hangings, the loops, the taches, the pins, and the sockets, the ornamental work, and the curious furniture, were each and all specially described. Every object and element, from the least to the greatest, was modelled in the Eternal Mind, and presented to the conception of Moses upon the mount, with the most explicit nota bene. "Look that thou make them after their pattern, which was shewed thee in the mount;" or still more emphatic, as found in the marginal reading, "according to the pattern which *I caused thee to see.*" In this contract there was nothing left for the exercise of human ingenuity, as respects the plan. The perfection of infinite wisdom could admit of no interference. But while the design was absolutely perfect, the skill to fill it up was not to be found in the concentrated wisdom of the human family, and much less among those who had been

trained from infancy under the yoke of abject slavery.

The whole plan was original, nay, Divine. No earthly model could be examined, no previous experience could be consulted. To God the Hebrews must look for all that pertained to this itinerant sanctuary. There is something very peculiar and instructive in the fact that God who "stretched out the heavens like a curtain, and who laid the foundations of the earth," should now, in the wilderness, sketch, and plan, and preside over, and at length fill with His glory, an artificial tent, constructed and furnished by human hands. Does not the fact imply that He is the God of order and beauty in the mechanical as well as in the natural world? By the fall, the lines of beauty and proportion had been obscured or obliterated in the darkened understanding. By the flood, the physical world was despoiled of its pristine glory. But here the God of grace evolves in symbol the highest glory of the moral world—Christ the true Tabernacle —while the symbol itself seems designed to exhibit the adaptation of material elements to mechanical purposes, and to restore, in a peculiar manner, the primitive ideas of the beautiful and true. In the day that Adam sinned, that wisdom with which he was endowed returned to God who gave it, but in the economy of redemp-

tion there seems to be a restoration in measure of that practical skill or genius by which the subjection of the creature to man shall be duly regulated. In the case of the Israelites, there was the organization of a Church, and of a state, destined to extend over centuries, and impart influences to the world through coming ages. The whole training of the wilderness has a relation to their future greatness nationally, as well as to their present instruction in spiritual knowledge, consequently their arts and sciences, their martial enterprizes, and their civil constitution, are all evolved in connexion with that revealed religion which recognizes every blessing as emanating from, and conducive to, the glory of the moral Governor.

Considered in this light, the erection of the Tabernacle is peculiarly instructive. The Creator of the heavens and the earth condescends to become the teacher of degenerate man, in common as well as in spiritual things. While the revelation of the Covenant occupies the first place, the dispensations of Providence regarding the condition of man in the present world are not overlooked nor forgotten. That God who reigns over universal nature deigns to direct, in the spreading out of badgers' skins, the binding of curtains, the planting of a beam, the fitting of a socket, the insertion of a pin, so that the

perfection of natural beauty might be displayed, while the radiance of Divine glory was luminously reflected.

EXPOSITION OF THE ARTS IN CONSTRUCTING THE TABERNACLE.

The Tabernacle was in itself a most comprehensive exposition of the arts. There was the hewing, sawing, plaining, joining, carving, and gilding of wood. There was the melting, casting, beating, boring, and engraving of metals. There was the spinning, weaving, dyeing, bleaching, sewing, and embroidering of fabrics. There was also the tanning and coloring of skins. There was work in gold, and in silver, and in brass, in blue, and in purple, and in scarlet, and in fine linen, and in goats' hair. There was work in the preparation of oil for the light, and spices for anointing oil, and for sweet incense. There was work for the lapidary in polishing stones, and for the sculptor in their engraving. But it is impossible to enumerate all the professions introduced in this Divinely-planned edifice. They are best described by the Spirit, when speaking of the qualifications of those called to the filling up of this perfect design, as being capable of working "in all manner of workmanship."

But how could all this artistic work be exe-

cuted by those who had been trained in slavery for the manufacture of bricks, and the building of store-cities, in the land of Egypt? Even Moses, who was instructed in the highest branches of Egyptian learning, nay, who was Divinely instructed in "the words of God, and the visions of the Almighty," though he had been made to see the model Tabernacle on the mount, yet he knew not how to weave, or engrave, or embroider. His position in the court was as far above the daily toils of the silversmith or the founder, as the degradation of his brethren was below them; nor had the shepherd life in Midian tended to the elucidation of his mechanical genius. But that God who had caused His Spirit to rest upon the Jewish legislator, now inspired by the same Spirit the artisans who were chosen to construct the Tabernacle; thus clearly evincing the instructive fact that mechanical skill flows from the same Divine source as legislative wisdom and moral courage. Thus it appears that human distinctions are found to vanish in proportion as we come within the radiance of the eternal throne. The ruler and the artisan feel alike distant from the infinite majesty of the universal Sovereign, while both are equally dependent upon Him for the wisdom respectively imparted. That God who had said to Moses at the back of the desert, "I will be

with thy mouth, and teach thee what thou shalt say," now promised to direct the head and the hands of those called to the building of the Tabernacle. "And the Lord spake unto Moses, saying, See, I have called by name Bezaleel, the son of Uri, the son of Hur, of the tribe of Judah : and I have filled him with the Spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship. And I, behold, I have given with him Aholiab, the son of Ahisamach, of the tribe of Dan : and in the hearts of all that are wise-hearted I have put wisdom, that they may make all that I have commanded thee." There is no previous record regarding these artificers, by which it can be ascertained whether they had formerly given themselves to the acquisition of a knowledge of the arts and sciences. The probabilities are rather against such a supposition. The frequent removal of the camp, together with the fact that their garments waxed not old in their march through the wilderness, go far to prove that there was no extensive cultivation of the arts prior to this period. Be this as it may, the intimation of their call to the work, and the announcement with which it was accompanied, leaves no room to doubt that the present endowments were altogether extraordinary. The Spirit of God inspired them with genius to understand

the Divinely-communicated plans, and with skill to fill them up, in that order and beauty which had been prescribed.

But this inspiration of genius was not confined to Bezaleel and Aholiab, the chief architects and partners in this vast undertaking. All who were called to the work are designated "wise-hearted." "And Moses called Bezaleel and Aholiab, and *every wise-hearted man*, in whose heart the LORD had put wisdom, even every one whose heart stirred him up to come unto the work to do it." Nor were the daughters of Israel excluded from having a part in the sanctuary, and in the gifts of the Spirit. "And all the women that were wise-hearted did spin with their hands, and brought that which they had spun, both of blue, and of purple, and of scarlet, and of fine linen. And all the women, whose hearts stirred them up in wisdom, spun goats' hair." Thus, it would appear that there was a general inspiration of genius in proportion to the special work given each to accomplish; and in the case of all the will and the affections seem to have been moved in conjunction with the understanding. The erection of the Tabernacle was a "labor of love," succeeding the revival of true religion among the tribes of Israel. For a season that work had been retarded by the backsliding of the people. The erection and

worship of the golden calf had provoked the Holy One to hide His face, and to inflict His judgments. But, by the intercession of Moses, their sin was pardoned, the promise of the Divine presence was renewed, and the tables of stone were again engraven with the moral law. The people had been deeply humbled, so that the return of Moses with the message of mercy was a signal for universal gratitude. The same commission that restored the tables announced the purpose of God regarding the sanctuary, and His holy command regarding the offerings to be dedicated for its construction and future service. This revival of true religion in the souls of the Israelites, accounts for that unparalleled liberality which characterized their offerings ; and it accorded with, and was preparatory to, that extraordinary inspiration of genius which, like their goods, was laid as a voluntary sacrifice upon the altar of a gracious God. The season and the circumstances in which the offerings were presented, and the work itself accomplished, indicate, in the most convincing manner, the close relation which subsists between the moral and the intellectual powers, and especially between the work of grace in the soul, and the expansion of all the human faculties. Is there not reason to believe, from this coincidence in the building of the Tabernacle, that when the

whole human family shall become wise-hearted, through the illumination of the Spirit during the Millennium, and when their offerings shall again flow with equal liberality into the treasury of the Lord, human genius shall be extended beyond all present conceptions? May it not be that, through this very channel, the God of providence shall open the treasury of nature, and pour out a blessing, that there shall not be room enough to receive it.

THE SACRED VESTMENTS.

The sacerdotal garments for the priesthood were made in conformity to a Divine pattern, and the skill whereby they were prepared is attributed to a Divine source. "Thou shalt make holy garments for Aaron thy brother, for glory and for beauty. And these are the garments which they shall make; a breastplate, and an ephod, and a robe, and a girdle." So explicit is the command regarding their formation that a whole chapter* is devoted to a description of the materials, the form, and mode of joining the various parts, the setting of the stones in the breastplate, together with the order and the seasons when they should be put on. These, like the Tabernacle, were prepared under the inspiration of the Spirit. "Thou

* Exodus xxviii.

shalt speak unto all that are wise-hearted, whom I have filled with the Spirit of wisdom, that they may make Aaron garments to consecrate him, that he may minister unto Me in the priest's office." The harmony of all parties in the erection of the Tabernacle, and the preparation of the sacred garments, is peculiarly marked by the forms of expression employed in their description. Those who gave are designated "willing-hearted," and those who wrought are represented as "wise-hearted." These terms seem to indicate the union of genuine piety with liberality, on the part of those who offered; and the combination of moral interest with inspired genius, on the part of those who performed the work. Here there was "wisdom dwelling with prudence, and integrity of purpose associated with consummate skill. Never before had there been seen such workmen, and never since has there been such perfection displayed in filling up the individual details of a stupendous design. The inspired penman has recorded their eulogium. "According to all that the LORD commanded Moses, so the children of Israel made all the work. And Moses did look upon all the work, and behold, they had done it as the LORD had commanded, even so had they done it: and Moses blessed them." No sculptured marble transmitted their names or physiognomies to

future generations. No earth-born titles of knighthood were conferred by the king in Jeshuran upon these successful artificers; but "he blessed them in the name of the Lord," and recorded their zeal and obedience in the Divine service as an imperishable memorial. The Tabernacle itself was their monument! The benediction of Moses was the public record of approbation from God and man. Realizing the inspiration of the Spirit, their work had been characterized as a labor of love. To them the glory of Divine wisdom was apparent in the selection of every element, in the formation of every instrument, in the adaptation of every part to the consummation of the original design. What must have been their feelings at its final dedication, when the whole was irradiated with the glory of the God of Israel?

THE TEMPLE.

The Temple, like the Tabernacle, was a work of God, though erected and furnished by human hands. The record regarding it is less explicit concerning the inspiration of the workmen, but there is enough to convince the unprejudiced mind that the skill of Solomon's artificers must be traced to the same source as that of Bezaleel and Aholiab. In this, however, the circumstances are entirely different. The exposition of

the arts involved in the construction of the Tabernacle, had been progressing for nearly four centuries. The nation of Israel was the most prosperous of all the nations of the earth. We doubt not that during this intervening period, many artificers had been specially endowed for the development of art as well as for the science of war. The accumulative wisdom of these centuries must be devoted spontaneously to the service of God in the building of that house where the Holy One of Israel should place His name. But there is another circumstance which must not be overlooked. The chosen king of Israel was endowed with understanding, and wisdom above all the men who had gone before him; and also above all by whom he has been succeeded. "God gave Solomon wisdom and understanding exceeding much, and largeness of heart, even as the sand that is on the sea shore. And Solomon's wisdom excelled the wisdom of all the men of the east country, and all the wisdom of Egypt. For he was wiser than all men." This special inspiration immediately preceded the building of the Temple. The first efforts of this wisdom were consecrated to God.

But though this was the largest measure of wisdom ever communicated to mere man, it was not sufficient to plan that house which was now

to be built to the LORD upon Mount Moriah. The God of infinite wisdom communicated the design to David, which Solomon was inspired with wisdom and understanding to fill up in mechanical detail. The parting counsels of the dying sovereign to his son and successor on the throne of Israel, has especial reference to the building of the Temple. "Take heed now, for the LORD hath chosen thee, to build an house for the sanctuary; be strong and do it. Then David gave to Solomon his son the pattern of the porch, and of the houses thereof, and of the treasuries thereof, and of the upper chambers thereof, and of the inner parlors thereof, and of the place of the mercy seat, and the pattern of *all that he had by the Spirit*, of the courts of the house of the Lord, and of all the chambers round about, of the treasuries of the house of God, and of the treasuries of the dedicated things, and all the vessels of service in the house of the Lord. . . . *All this said* David, the LORD made me understand by writing, by His hand upon me, even all the works of this pattern." In receiving this momentous charge, there were communicated gracious promises. David said unto Solomon his son, "Be strong and of good courage and do it; fear not, nor be dismayed, for the LORD God, *even my God* will be with thee, He will not fail thee nor forsake thee until thou hast finished all the work for the

service of the house of the LORD. And behold the courses of the priests and the Levites, even they shall be with thee, for all the service of the house of God, and there shall be with thee for all manner of workmanship, *every willing and skilful man* for any manner of service, also the princes and all the people will be wholly at thy commandment." Here there is the promise of Divine guidance, the promise of skilful willing workmen—the promise of priestly countenance, and of princely assistance. Does not this promise, as given by inspiration to David, necessarily imply that the skill and the readiness of mind must be traced to the source from whence the promise itself emanates? The harmony and co-operation are similar to what was unfolded in the previous construction of the Tabernacle, consequently, even upon the philosophical maxim, that "like causes produce like effects," the mechanical glory and perfection of the Temple must be traced to the inspiration of the Spirit of God.

This is fully acknowledged in the dedication prayer by which it was set apart to the service of Jehovah, on that solemn day, when it was filled with "the glory of the Lord." "Blessed be the Lord God of Israel *who hath with His hands* fulfilled that which He spake with His mouth to my father David. . . . O LORD

God of Israel, there is no God like Thee in the heaven nor in the earth; which keepest covenant, and showest mercy unto Thy servants. . . . Thou which hast kept with His servant David my father that which Thou hast promised him, and speakest with Thy mouth, and hast fulfilled it with Thine hand, as it is this day."* In the introductory sentences of this dedicatory prayer, he unfolds the relation in which this holy house stood to God the designer, and to Solomon the architect. "The LORD hath said, That He would not dwell in the thick darkness. But I have built an house of habitation for Thee, and a place for Thy dwelling forever." While proceeding with a review of the Divine promise, made to the house of Israel; and while reflecting upon the dispensations of Providence towards the house of David and especially when he gazed upon the Temple as filled with the Divine glory, he lost sight of his own regal dignity—he forgets his comprehensive wisdom—he rises above the priests, the princes, the cunning artificers—he beholds the Temple as *of God and to God*—as the exposition of eternal wisdom in its first elements of thought, and of Almighty power, and infinite goodness in its final consummation.

In the dedication of that, which David the

* 2 Chron., vi. 14, 15.

king had prepared for the building of the Temple, God was in the fullest sense recognized as the Author of every gift. "Thine, O Lord, is the greatness, and the power, and the glory, and the victory, and the majesty; for all that is in the heaven and in the earth is Thine; Thine is the kingdom, O LORD, and Thou art exalted as head over all. Both riches and honor come of Thee, and Thou reignest over all; and in Thine hand is power and might; and in Thine hand it is to make great, and to give strength unto all. Now, therefore, our God, we thank Thee, and praise Thy glorious name. But who am I, and what is my people that they should be able to offer so willingly after this sort? *For all things come of Thee, and of Thine own have we given Thee.*" To this the gracious soul of Solomon responds, when he beheld the goodly Temple beaming with the rays of heavenly glory. In every stone of that building—in every gilded beam—in every ornamental pillar, in every brazen altar, the hand Divine was visible. Nay, in every object, from the tongs and the snuffers, to the mercy seat and the cherubim, the glory of God was exhibited to the eye of faith, in their original construction and sacred use. Genius, and wisdom, and princely power, and sovereign authority, vanish in conception, before the glory and majesty of the Holy One of Israel. The God of

the promise fulfilled—the God of the covenant pledged—the God of the Temple irradiated—the God of the Holy of Holies beaming in infinite majesty from above the mercy seat—was "all and in all" to the faith and hope of Solomon, and unto Him alone will he ascribe the glory. "Blessed be the LORD that hath given rest unto His people, Israel. . . . . Now, therefore, arise, O LORD God, into Thy resting-place, Thou and the ark of Thy strength; let Thy priests, O LORD God, be clothed with salvation, and let Thy saints *rejoice in goodness.*"

The Tabernacle, and the Temple, and the sacred vestments were holy, and in their construction and use were typical. But though typical, they were still mechanical. That wisdom by which they were formed was available for common purposes, and those lines of beauty which they displayed might serve as models to future artisans. In their consecration to God, they were not viewed simply as types, but also as the exponents of that wisdom and skill which the Spirit of God had conferred. The artificers were willing-hearted as well as wise-hearted, consequently, the intellectual gifts communicated, were dedicated to the service of God, as really as the materials from which it was formed. Is there not here a type of the future renova-

tion of the arts and sciences, and their entire consecration to the service and honor of God? To this the prophet Zechariah looked forward. "In that day shall there be upon the bells of the horses, HOLINESS UNTO THE LORD; and the pots in the LORD'S house shall be like the bowls before the altar. Yea, every pot in Jerusalem and in Judah shall be holiness unto the LORD of hosts." That is, when with the gracious outpouring of the Spirit, there shall be vast enlargement of the human powers, all their energies shall be devoted to God. The wisdom communicated from above will be profitable to direct in every enterprize, and the most common operations of business, shall be conducted with an eye to the glory of God. Then shall the matron and the merchant meet at the Lord's treasury. Then shall the architect and the mechanic rejoice together in the work of the Lord. Nor is this all, The Spirit of the sanctuary shall pervade the workshop and the manufactory—the counting-house and the exchange—the stately mansion and the humble cottage. Then shall the family crests—the badges of earthly heraldry—be supplanted by this universal symbol of the supremacy of Jehovah. Nor shall this recognition of the moral Governor be only public or official. HOLINESS UNTO THE LORD shall be the motto exhibited in every social circle

and reflected in the grace and purity of every Christian family. Then shall the angelic song, "Glory to God in the highest," be re-echoed from the mountain and the plain—from the bosom of the sea, and from the solitude of the desert—from the joyous city, and from the sober hamlet. The factory and the fireside shall both become vocal with the praise of the LORD.

The language of the prophet is peculiarly emphatic. It is not only in the Temple, that the dedicated vessels of service are holy, but "every pot in Jerusalem and Judah" shall bear the same inscription. That is, In the Temple —in the city of solemnities, and in the rural mansion, God shall be recognized, acknowledged, and adored. The religion of the Bible shall no longer be confined to the Sabbath or the sanctuary, but permeating the hearts of the renovated community, it will manifest itself in every enterprize—sweeten every relation—sanctify every joy—alleviate every trial, and mitigate the sum total of human suffering. Then shall indeed be realized the conclusion of the angelic stanza—"On earth peace, good-will toward men." Then shall the redeemed of the LORD rejoice in the reign of righteousness, and in the triumphs on earth, of grace and truth. Such

were the inspired anticipations of the poet Cowper---

"The groans of nature in this nether world
Which heaven has heard for ages, have an end,
Foretold by prophets, and by poets sung---
Whose fire was kindled at the prophet's lamp,
The time of rest, the promised Sabbath comes.
Six thousand years of sorrow have well nigh
Fulfill'd their tardy and disastrous course
Over a sinful world; and what remains
Of this tempestuous state of human things
Is merely as the working of a sea
Before a calm that rocks itself to rest."

CHAPTER VI.

SCRIPTURE RECORD OF INSPIRED GENIUS DEVOTED TO THE ORDINARY PURPOSES OF SOCIAL LIFE.

THE building of the Temple was succeeded by the golden age of Jewish history. The reign of Solomon was the culminating point of the Hebrew dynasty. During his administration the body politic had realized its fullest development. The preceding ages were preparatory for that wonderful display of human wisdom and regal glory by which the land of Palestine was distinguished at this period among the nations of the earth. It has been poetically remarked, that "just as the aloe shoots, and in one stately blossom pours forth the life which has been calmly collecting for a century, so it would appear as if nations were destined to pour forth their accumulated qualities in some characteristic man, and then they droop away." It was thus with the nation of Israel during the period of Solomon's glory. That vine which the LORD had brought out of Egypt had taken deep root,

and had filled the land. The previous inspiration of legislators, and warriors, and artisans, had prepared the way for a fuller and richer display of justice, peace, prosperity, and progress, than were attained during any other period of the Jewish nationality. In Solomon is exhibited the apex of this constitutional pyramid, radiant, indeed, with the rays of wisdom, but reflecting a borrowed light, even that effulgence which beams from the eternal throne. "The LORD gave him wisdom and understanding exceeding much, and largeness of heart, even as the sand that is on the sea shore, so that his wisdom excelled the wisdom of all the children of the East country, and all the wisdom of Egypt." As "Melchisedec, King of Salem, priest of the most high God," stood alone in the ministrations of the spiritual sanctuary, thus stood Solomon as king in Jerusalem, gloriously isolated by the magnitude of his mental powers, when inspired as the minister of Nature's temple, to elicit and expound her hidden treasures. The first fruits of inspired genius were properly devoted to the building of the Temple; but that wisdom wherewith he was endowed was not exhausted by one gigantic effort. His mental powers seem only to have been strengthened by exercise in accomplishing that stupendous enterprise. Having tasted the sweets of wisdom in laying nature

under tribute for the honor of God, he turned again in the giant strength of that genius wherewith the Spirit had endowed him, to her exhaustless resources, that he might elicit her treasures for the benefit of man, and increase the stock of human knowledge, by an exposition of their nature and purposes.

It is customary to contemplate and to speak of Solomon in regard to his regal glory and mental magnitude, and to view these as if they were designed for his personal aggrandisement. But though isolated by the expansion of his mental powers, there was no design that his wisdom should be concentrated in himself, or appear merely to be admired by his fellow-men. The inspiration of the Spirit was received as a talent to be traded with, for the benefit of humanity. The record of his great works is a Divine testimony to the manner in which his peculiar wisdom was exercised. In his person and history we are furnished with an illustration of the mind's capabilities, and of the natural course it will pursue when Divinely illuminated. The interests of the Church, the welfare of the state, and the comfort of the family, are beautifully blended in the early period of his administration. Each of these branches might furnish a topic for lengthened illustration, but the present object is, to contemplate the wisest of men in the

most favorable circumstances for mental development; and, more especially, to consider the objects and pursuits in which this colossal genius is found embodied.

INSPIRED WISDOM EVOLVED IN AGRICULTURE.

His reign was distinguished by the cultivation of the useful arts. In agriculture, and landscape designs, he had no compeer. "I made me great works, I builded me houses, I planted me vineyards. I made me gardens and orchards, and I planted in them trees of all kinds of fruits. I made me pools of water, to water therewith the wood that bringeth forth trees. I had great possessions of great and small cattle, above all that were in Jerusalem before me." Here is, perhaps, the first example of scientific agriculture. The record, as furnished by the Spirit seems to indicate, though yet future, the partial restoration of the luxuries and beauties of Paradise. Under the hand of Solomon the "earth was subdued," and its fruitfulness elicited, as it never had been in any preceding age. Is there not, in the portrait of Jerusalem and Judah, as drawn by the Spirit, a lively picture of what this barren world shall yet become, when the Lord shall pour forth his blessings upon his redeemed people? Is there not here a type of earth's golden era?

"Of scenes surpassing fable, and yet true,
Scenes of accomplished bliss; which who can see,
Though but in distant prospect, and not feel
His soul refreshed with foretaste of the joy?
Rivers of gladness water all the earth,
And clothe all climes in beauty: The reproach
Of barrenness is past. The fruitful field
Laughs with abundance, and the land, once lean,
Or fertile only with its own disgrace,
Exults to see its thistly curse repealed.
The various seasons, woven into one,
And that one season an eternal Spring

INSPIRED GENIUS UNFOLDED IN ARCHITECTURE.

Of the Temple, as a monument of architectural magnificence, notice has already been taken. As a monument of Divine wisdom reflected in the person of Solomon, it stands in the sacred category with the Tabernacle, and the Altar, and the Ark of the Covenant, which were all consecrated to the spiritual service of Jehovah. But there are other monuments of his inspired wisdom, which stand in the class of common blessings—such as his royal palace, which occupied thirteen years in its construction, and the house of the Forest of Lebanon, of which the Spirit of God has given us a geometrical design.* The magnificence of these palaces can only be conceived by a careful scientific study of the description recorded. The exposition of the arts appears in comprehensive development, when we

* 1 Kings, vii.

reflect upon all the inventions which must necessarily have been brought into use at their erection. Of some of these the Spirit has given us distinct information. These palaces were built of "costly stones, according to the measures of hewed stones, *sawed with saws*, within and without, even from the foundation unto the coping. . . . . And the foundation was of costly stones, even great stones, stones of ten cubits, and stones of eight cubits." These must have required extensive engineering skill to transfer them from the distant quarry, and to place them upon the stately edifice. The ornamental work was in keeping with the building, and all the fittings and furnishing were of the most exquisite description. Let one specimen suffice. "Moreover, the king made a great throne of ivory, and overlaid it with the best gold. The throne had six steps, and the top of the throne was round behind, and there were stays on either side on the place of the seat, and two lions stood beside the stays. And twelve lions stood there upon the one side and upon the other, upon the six steps. *There was not the like in any kingdom.*" Why, it may be asked, did the Spirit record this exposition of art? Simply because it was the exponent of that Divine wisdom wherewith the king was so largely endowed—the innocent application of that architectural

taste of which he was constituted the historic head. The designs of Babylonian palaces have perished with the ruins of the doomed city; but though Jerusalem has fallen, the plans of the Tabernacle, the Temple, and the House of the Forest of Lebanon, have been deposited in the imperishable archives of Bible history. This record is at once a testimony to God's faithfulness in fulfilling the promises of prosperity made to David, to the inspiration of genius wherewith Solomon was endowed, and to the resources of wealth in that land in which the Israelites were planted. May it not be that during the Millennium, when righteousness shall reign, and universal peace shall be enjoyed, spiritually illuminated kings and nobles shall yet revive this model architecture, restoring the beautiful and the true, while exhibiting the riches of the Divine Benefactor?

INSPIRED GENIUS DISPLAYED IN WORKS OF TASTE AND ORNAMENT.

The precious wood imported from Ophir imparted a fresh impulse to Solomon's inventive powers. "The king made of the almug trees pillars for the house of the LORD, and for the king's house, harps also and psalteries for singers." These he afterwards describes by the significant appellation, "The delights of the sons of men,

as musical instruments, and that of all sorts." Though his reign was one of peace, his halls exhibited the trophies of war wrested from the enemy. Beside these were placed the targets and the shields of beaten gold which were made by the hundred, and deposited in the house of the forest of Lebanon. To these warlike symbols may be added the gorgeous drinking vessels of gold, and "all the vessels of the house of the forest of Lebanon which were of pure gold." Space forbids a description of the molten sea, or the chapiters of molten brass, or the nets of checker work, and the wreaths of chain work, which were prepared for ornament. We refer the student of artistic operations to the full and explicit record given by the Spirit in the seventh chapter of the first book of Kings. But let it be observed that in addition to the inspiration of Solomon, a heathen artist was prepared by the Spirit to accomplish this work. "King Solomon sent and fetched Hiram out of Tyre. He was a worker in brass, and he was filled with wisdom and understanding, and cunning to work all works in brass." Like Bezaleel and Aholiab he was Divinely qualified, and called by the king of Israel to special work, both sacred and civil. If there was found a worker in brass "filled with wisdom" at Tyre in the highest day of Jewish prosperity and favor, may not such

be found from age to age even in the lands of heathenism, and shall not many such be found in this world's Christendom during the coming Millennium ?

INSPIRATION OF GENIUS, GIVING RISE TO NAVAL ARCHITECTURE, AND INTERNATIONAL COMMERCE.

Prior to the reign of Solomon, there seems to have been little traffic by sea. The wants of the Israelites were supplied from internal resources. But Palestine being destitute of gold in its mineral state, the necessity for commerce with other lands soon became apparent to the mind of Solomon. David obtained gold by conquest in great abundance ; but Solomon introduced a peace-policy, and obtained by commerce what had formerly been sought only by the sword. "King Solomon made a navy of ships in Eziongeber, which is beside Eloth, on the shore of the Red Sea, in the land of Edom." This fleet was manned by Tyrian sailors, who were distinguished for nautical skill. "Hiram sent in the navy his servants, shipmen that had knowledge of the sea, with the servants of Solomon." This navy traded with the East Indies, bringing gold and almug trees and precious stones from Ophir. He traded with Egypt and the surrounding kingdoms, in horses and cha-

riots and linen. It seems evident, that the principles of free-trade, which in modern times have so long been overlaid by national selfishness, were fully established by the king of Israel; and so great was his prosperity under that policy, that "he made silver to be in Jerusalem as stones, and cedars made he to be as sycamore trees in abundance." These records of Bible history are sufficient to prove the tendency of true wisdom to develop itself in the useful arts; and also the influence of the arts in promoting the brotherhood of nations. The wonder is, that with such convincing evidence the question of free-trade should have been so long pending for solution in Britain; and the greater wonder is, that Britain alone has adopted this policy. The reign of Solomon is a standing memorial of the legitimate application of native genius in solving the question of national intercourse. Strange! that with the aid of the compass, and the use of steam, nations should still be iron-bound by the shackles of prejudice and local selfishness! But the time shall yet come when inspired genius shall sit upon the thrones of earth, and the world shall become like Palestine, in its policy of peace, and universal prosperity.

THE INSPIRATION OF GENIUS AS EMBODIED IN PHILOSOPHY AND LITERATURE.

The bent of Solomon's mind towards agriculture, art, and commerce, has already been noticed, and the record of his achievements is such as to place him pre-eminently above all kings. But even these departments were insufficient to exhaust that genius wherewith he was endowed. It is in the higher branches of human knowledge that he stands transcendently above the stature of all his contemporaries and successors. His mind appears, in the plane of human knowledge, as a mental Colossus, whose altitude cannot be measured by the ordinary intellectual quadrant. His was a culminating mind which embraced the entire region of existing knowledge. His genius was the practical embodiment of that prophetic type of intellect which stretches far in the distance, and grasps the full development of a future age. He was the chief of those master spirits which constitute the landmarks of human progress. As the snowy-crown of the Alpine chain reflects the morning rays of the sun of nature, long ere the depths of the vallies are flooded by his effulgent beams ; so the towering intellect of Solomon was made to reflect that light of genius which shall yet be diffused in copious measure upon future generations.

None can predict what may be the expansion of the mental powers in that coming age, when "the glory of the LORD shall be revealed, and all flesh shall see it together."

How difficult to classify his studies or his acquirements! The amplitude of his knowledge confounds philosophic distinctions. Each branch appears so radiant that it naturally blends with the pure light of every other. Each topic and object seems as if brought within the beams of divinity, reflected through the most exalted of merely human intellects. He was a living Encyclopædia of the arts and sciences—a system of philosophy—a body of divinity. The cabinet of knowledge—natural, political, moral, and sacred—opened before the touch of his genius; as the prison gates unfolded their leaves before the Apostle when led by an angel. Of his general knowledge it is said, "he was wiser than all men, than Ethan, and Heman, and Chalcol, and Darda." "His wisdom excelled the wisdom of the children of the East country, and all the children of Egypt, and his fame was in all nations round about."

As a naturalist, "he spake of trees, from the cedar tree that is in Lebanon, even unto the hyssop that springeth out of the wall; he spake also of beasts, and of fowl, and of creeping things, and of fishes." As a moralist and econo-

mist, he stands unrivalled—for "he spake three thousand proverbs," of which such as were suited to general utility have found a place in the sacred volume. As a poet, we may form some conception of his genius from the number of songs indited, being no less than "one thousand and five." The solitary specimen of these, which has found a place in the temple of revealed truth, is eulogised by the Spirit, when he speaks of it as "the song of songs"—that is, the perfection of moral purity and poetic beauty. As a philosopher, he could solve the most abstruse problems, and with inimitable brevity and power record their solution in some proverbial sentence. Thus, the question of circulation in the atmosphere, and liquid elements of nature—as now discovered by philosophical observation—was stated in a single verse, as an ordinary matter of course. "All the rivers run into the sea, yet the sea is not full: unto the place from whence the rivers come, thither they return again." Volumes have been written by those esteemed great philosophers, upon such topics, but by this master-mind the essence of most comprehensive truths is combined in a sentence, replete with instruction.

Acquaintance with even one of these departments of knowledge would render the name of a philosopher illustrious in our own day, notwith-

standing the lapse of more than twenty-eight centuries since Solomon's prelections were delivered to crowned students in Jerusalem. To write or speak with scientific acumen upon any branch of modern physics, will furnish a note of introduction to the literati of Europe. But Solomon was alike at home in every department of knowledge, and not more at home than ready to communicate. The fame of Solomon's wisdom drew around him all the master spirits of the age. Jerusalem was the seat of science for the world; the court of Solomon the rendezvous of philosophers, who came to light their lamps at this planetory orb, that they might shine by his reflection in their own remote and gloomy spheres. "There came of all people to hear the wisdom of Solomon, from all kings of the earth, which had heard of his wisdom."

The wisdom of Solomon was associated with the most enlarged affections, even "largeness of heart as the sand that is on the sea shore." In ordinary minds, a very diminutive portion of Solomon's learning frequently leads to the nurture of pride, which is usually exhibited in the ungainly *hauteur* of the pedantic preceptor. But amidst the vastitude of knowledge in which his capacious soul daily revelled, there was ever found benignity beaming from those eyes, which reflected the inner light upon his distinguished

pupils, and "in his tongue was the law of kindness," even while pouring forth that burning eloquence which astonished and enriched the world. Though grasping in one intellectual embrace, philosophy, morality, and divinity; and though sweeping with a heaven-taught and divinely-directed hand the sympathetic chords of Nature's harmonicum, yet, as a wise and humble preacher, "he still taught *the people* knowledge." Every question was answered with candor and kindness. In his presence feminine delicacy was encouraged to pour forth freely all its interrogatories. "When the Queen of Sheba heard of the fame of Solomon, concerning the name of the LORD, *she came to prove him with hard questions.*" When admitted to an audience, "she communed with him of all that was in her heart. And Solomon told her all her questions: there was not any thing hid from the King that he told her not."

Perhaps the best comment upon Solomon's greatness is the simple Scripture record of this interview. This Queen was the sovereign of one of the richest countries, even of Sheba. She was a person of no ordinary acquisitions in knowledge and wisdom. She came not merely to see the magnificence of the palace, and the manners of the court, but to obtain from this master-spirit the solution of all her perplexing

questions. How striking the result upon her mind—though trained amidst the profusion of earthly glory in her court at Sheba—"when she had seen all Solomon's wisdom, and the house that he had built, and the meat of his table, and the sitting of his servants, and the attendance of his ministers, and their apparel, and his cupbearers, and his ascent by which he went up to the house of the LORD, there was no more spirit in her. And she said unto the King, It was a true report that I heard in mine own land of thine acts and of thy wisdom; and behold the half was not told me." To whom does she ascribe the honor of all this wisdom and magnificence? Does she flatter Solomon, or give him the praise of his architectural achievements? Does she look upon his wisdom as self-attained, and give him the personal honor of all his acquisitions? Does she burn incense to genius, and present her offering at the shrine of human wisdom? Verily, no! "Blessed be the LORD thy God, which delighted in thee, to set thee on the throne of Israel: because the LORD loved Israel forever, therefore made He thee king to do justice and judgment." The conduct of the Queen of Sheba is the best illustration of the principle for which we contend throughout this treatise. She admired the works of Solomon as highly as her mental constitution would admit. She admired

the genius by which they had been contrived and constructed. But she admired most of all, nay, adored, the blessed God of Israel, by whose Spirit that genius was inspired, and by whose providence these riches were provided, and thus presented in their forms of magnificence and beauty.

This feeling was common to the ancients. The worshippers of the true God, and the worshippers of heathen idols, were wont to ascribe peculiar manifestations of genius to a Divine source. The poets invoked the muses, and warriors presented their sacrifices to propitiate fictitious deities. Shall Christianity alone discard the recognition of God from the gifts He communicates? The inspirations of genius, as revealed, and the operations of genius, as recorded in the Bible, clearly prove that it is a special gift, which God in His supremacy bestows upon whom He will, for the accomplishment of His designs. It is a reflected light, which centres in the fountain of infinite wisdom—the source of all that is beautiful, and true, and beneficent in nature and in art.

"Say, why was man so eminently raised
Amid the vast creation; why ordain'd
Through life and death to dart his piercing eye,
With thoughts beyond the limits of his frame;
But that the Omnipotent might send him forth,
In sight of mortal and immortal powers,

As on a boundless theatre, to run
The great career of justice; to exalt
His generous aim to all diviner deeds."

Some may be ready to found an objection against the general theory deduced from this species of inspiration, upon the testimony of Solomon, when describing all such achievements as characterized by vanity. "I have seen all the works that are done under the sun, and behold all is vanity and vexation of spirit." Again, the decline of Solomon's piety may be ascribed by some to his occupation with these works of science, art, and literature. Of this cause there is no indication in the sacred narrative. As to the origin of his apostacy the Bible is explicit. He yielded not obedience to his own maxim. He ceased to rejoice with the wife of his youth; and having loved idolaters, their influence over him alienated his affections from the true God. Though these works were characterized as vanity, there was no condemnation of any of those legitimate pursuits in which he had been engaged. It is evident that while he was most occupied, the current of his piety ran deepest. It was only when his ardor in the service of God had somewhat abated, and when his studies had been supplanted by ease and indulgence, that his piety declined. Besides, his record of embittered experience may be viewed as an evangelical

reflection upon the relation between the immortal soul and the most exalted of creature comforts. If any descendent of Adam could possibly realize happiness in temporal things, Solomon had the best opportunity ever afforded. But the wildest range—the fullest cup of creature comforts, viewed apart from God, is utterly insufficient to confer happiness.

> "Attempt how vain—
> With things of earthly sort, with aught but God,
> With aught but moral excellence, truth, and love,
> To satisfy and fill the immortal soul!"
> This is the attempt:
> "To satisfy the ocean with a drop;
> To marry immortality to death;
> And with the unsubstantial shade of time
> To fill the embrace of all eternity."—POLLOK.

The argument, as hitherto pursued, has been illustrated by reference to special and peculiar cases. These cases, however, though beyond the ordinary capabilities of man, embrace the common operations of the human mind, and the ordinary application of human knowledge to material things. The great difference is in the degree of skill and knowledge brought into operation. There is another point of difference—the fact that they are historically associated with the development of the plan of redemption. Legislators, such as Moses, the Elders, Saul, David, and Solomon, were raised up in immediate relation to the Church of Israel. Artisans,

such as Bezaleel, and Aholiab, and Hiram, were specially prepared for the construction of Divinely-planned sanctuaries, to be dedicated to holy purposes. Warriors, such as Othniel, and Gideon, and Jephtha, and Samson, and David, were chosen deliverers of a chosen people. Consequently, the inference is fallaciously drawn, that it is only in such peculiar cases that we can expect extraordinary gifts, or that we ought to recognize the outgoings of the Spirit of God as a ruling and guiding Spirit in the moral government of Jehovah. Is not this to set limits upon the Holy One, and to confine the Providence of God to special cases related to the Church instead of embracing the circumstances of the Church in the universal plan, and viewing the government of God as directing the whole with a reference to His own glory in her complete development? This is also to draw a line of distinction between great and little events, founded upon our local conceptions of moral and physical relations among the creatures. But the whole world has a relation to the universe, and to the Moral Governor. The whole family of man has a physical relation to the world, and a moral relation to God, by whom both were created. The "principalities and powers" of the world have a relation to the Divine government, and are made subservient to the Divine

purposes. The Church has a relation to humanity, to civil institutions, and to the Divine dominion. The family institute has a relation to the Church, to the state, and to the moral dominion of God. Each individual has a relation to all these ; consequently nothing that transpires in the universe can be unimportant to the Moral Governor, nor to the various parties within the range of that government. Science and art, or the knowledge of physical things, and the capability to use them, have a relation to every man personally, and to all men socially, as respects the means of sustenance, the enjoyment of physical comfort, and the progress of mental development. Science and art have a relation to God, inasmuch as they expound His attributes, and show forth the riches of His kingdom. It is no degradation of Deity in our conceptions, to behold Him producing and conducting physical and mental operations in the artificial, as well as in the natural world. If the comfort and happiness of His creatures are not beneath the condescension of His love, the means by which these may be promoted are certainly not beyond the compass of His wisdom, or the grasp of His power. Why, then, should any display of Divine beneficence in the history of His creatures be overlooked and disregarded ?

It is true that those special dispensations and

peculiar gifts, which are recorded in the Bible, stand in near relation to the Church and the exhibition of the plan of mercy. Are all other dispensations of providence, besides those recorded, or such as may be in the same category, to be treated as common; nay, as the operation or acts of the creature only? Would not this be an exclusion of God from His own dominion? The acts of the Redeemer to which John refers, as not recorded, are not less Divine than those which have obtained a place in the sacred narrative. In like manner, the dispensations of providence relating to the world, and to the history of humanity in the world, are as really Divine as any recorded in connexion with the history of His Church. But this is a doctrine, not merely to be inferred from the Divine testimony regarding His moral government, but a doctrine explicitly stated by the prophet Isaiah,* in which God is represented as the author of agricultural skill, and also of the ordinary farming implements.

"Give ye ear, and hear my voice; hearken, and hear my speech,
Doth the plowman plow all day to sow? Doth he open and break the clods of his ground?
When he hath made plain the face thereof,
Doth he not cast abroad the fitches, and scatter the cummin,

* Chapter xxviii. 23–30.

And cast in the principal wheat and the appointed barley, and the rye in their place?
For his God doth instruct him to discretion, and doth teach him.
For the fitches are not threshed with a threshing instrument,
Neither is a cart wheel turned about upon the cummin;
But the fitches are beaten out with a staff, and the cummin with a rod.
Bread corn is bruised; because he will not ever be threshing it,
Nor break it with the wheel of his cart; nor bruise it with his horsemen.
This also cometh forth from the LORD *of hosts*
Which is wonderful in counsel and excellent in working."

This passage is so direct and explicit, that it requires no comment when adduced in proof of the whole theory propounded in the preceding chapters. The simple reading of the text, will convince any mind believing in Bible truth, that the works of art were emanations of Deity. The man who will deny the fact in face of this testimony, must be prepared to deny the existence of God, and to reject that revelation which unfolds His character. This is a testimony to the minute care with which the moral Governor watches over the lives and actions of His creatures. The Spirit here selects the simplest efforts of human skill, to "subdue the earth," and He shows that even these elementary principles of agricultural genius must be traced to the fountain of infinite wisdom. By beginning

thus, with the simpler arts, would He not teach us that God is the author of all? If the ploughing, sowing, reaping, and threshing out of the grain by the simplest Oriental implements be of God; on what principle, shall Divine wisdom, power, and goodness be excluded from the complicated machinery of modern husbandry? If the communication of knowledge and wisdom and power be derived from God, in conducting the concerns of a farm, is it not equally, nay, more clearly manifest in the complex machinery of the workshop, and the factory—in short, of all that obtains a place in the region of artificial phenomena? If the common flail or staff, the drag, the threshing-wain, and, even the trampling hoofs of oxen, as employed by the Orientals in separating the grain from the straw, led the prophet to adore the LORD of hosts, as "wonderful in counsel and excellent in working," shall those upon whom the light of the Gospel has risen, become obscure in their views of God's special providence? Shall the increase of knowledge make men so far forgetful of God that mechanical inventions will only elicit the worship of genius?

If these simpler operations and implements moved the mind of the ancient prophet, shall magnetism and steam, and electricity excite no sense of gratitude to the God of Providence?

If the sight of a plough, and the lowing of the oxen, and the sound of the flail, drew forth these sublime and pious acknowledgments of God, shall the spinning-mill, the power-loom, the steam-ship, the railway, and the electric telegraph, elicit no glory to the LORD of hosts who is wonderful in counsel and excellent in working. God forbid, that with the rapid development of the world's resources—the expansion of knowledge—the extension of commerce —the increase of national wealth—the multiplication of the means of personal and social comfort—we should become so far atheistic as to forget or deny the Author of every blessing! With the Bible doctrine of a presiding and directing providence so clearly revealed, shall we become the worshippers of mammon or bow down to genius, or sound the note of praise to national enterprize? Shall the discoveries in science, and the inventions of art tend only to lead this highly favored generation away from God? Shall the mitigation of the physical curse only tend to produce fresh acts of rebellion against the supremacy of the moral Governor? *Let it not be,* is the warning voice of inspiration! Let it not be, is the solemn response of enlightened reason! Let it not be, is the testimony of God engraven at once upon the mental and artificial phenomena of the world. To be

guilty of such ingratitude would degrade the civilized nations below the scale of heathendom. The bards of Greece and Rome celebrated the praises of their fictitious deities—the supposed sources of wealth—the patrons of agriculture, of science, of art, and of war. Shall Christian nations withhold from the "Father of lights—the Giver of every good and perfect gift," that homage which the heathen world accords to imaginary deities? Nay, rather let us plant our foot upon the firm foundation of a special providence. Let us see as of old, the operations of the Spirit revealed in this or that aspect of human genius. Let us receive every useful invention as a special gift of the bountiful Benefactor. Then shall we feel that "God is in the heavens, in the earth, and in the sea." Then shall His steps of infinite majesty appear in the mighty deep, and on the swelling tide of human history. Then shall the traces of omnipotence be seen inscribed upon every mechanical, as really as upon every natural object. Then shall it be felt that God's presence is not confined to consecrated temples or hallowed shrines; nor the homage which he justly claims, to the stated worship of the Sabbath or the sanctuary. While heaven is His throne, and earth His footstool; angels and men, in all the busy walks of life, are but His agents. Consequently, amidst the

revolving wheels of the factory—the sounding hammers of the workshop—the rushing carriages of the railway, and the trembling vibrations of the electric telegraph, the Divine presence may be seen and felt as really as when reflected by the sublimest objects of natural scenery. To the devout philosopher, the pious mechanic, and the Christian operative, the various works of art must appear as the spontaneous emanations of infinite wisdom, and the standing monuments of boundless beneficence.

Were we heaven-taught, as we might have been, with the Bible for our guide, we would discover by a spiritual intuition, that the natural, the intellectual, and the moral, are but three concentric spheres of which God is the author; in and over every department of which Divine sovereignty and glory are peculiarly displayed. Consequently, that which holds true of the universe—that "without Him was not any thing made that was made," is also true of the entire region of artificial phenomena. The genius that contrived, the skill that formed, and the materials out of which every invention was constructed, furnish no exception to this universal announcement. That propriety which God as Creator claims over the artificer in iron, is applicable to every constructor of machinery. "Behold, I have created the smith that bloweth

the coals in the fire, and that bringeth forth an instrument for his work, and I have created the waster to destroy." The artisan that forges the sword of destruction, the iron of which it is formed, and the hand that wields it, are but different instruments employed by the God of providence to avenge His quarrel. If this be true regarding the weapons of war, is it not equally true of those inventions which confer innumerable blessings upon the family of man? And is it not evident *if they are God's*, to Him redounds the glory, whosoever may be employed to discover their elementary principles, or to adjust their due proportions?

However vast may be the expansion of mind in the contemplation of nature, there is here also a source of mental elevation when beholding the rude elements of her material system remodelled in innumerable forms of utility and beauty. In not a few cases the inanimate elements are presented as the very automatons of active life; doing man's work and increasing general comfort. Nothing in science or art is so humble as to be unworthy of notice, nor so simple, if viewed in a believing spirit, as not to afford profitable lessons. The fact that God has made provision in nature for its production, and in due time created the reflecting agent to adjust its proportions, is sufficient to invest it with

a permanent interest. As a mere machine, it is associated with a living agent, by whom its symmetry was evolved. That moral agent is associated with a still higher intelligence—even with the Author of the universe. Of all that is sublime in nature, the mind of man is the most exalted. Though now a ruin, it bears evidence of its original glory. Even as fallen, it exhibits some of the remaining rays of Divine effulgence.

"Search, undismayed, the dark profound,
Where Nature works in secret; view the beds
Of mineral treasure, and the eternal vault
That bounds the hoary ocean; trace the forms
Of atoms, moving with incessant change,
Their elemental round; behold the seeds
Of being, and the energy of life
Kindling the mass with ever active flame;
Then to the secrets of the working mind
Attentive turn; from dim oblivion call
Her fleet ideal band; and bid them go
Break through time's barrier, and o'ertake the hour
That saw the heavens created. Then declare,
If aught were found in these external scenes
To move thy wonder now."—AKENSIDE.

CHAPTER VII.

INQUIRY REGARDING THE SOURCE OF THAT DIFFERENCE OF CONCEPTION WITH WHICH THE MIND IS WONT TO VIEW THE WORKS OF NATURE AS COMPARED WITH MECHANICAL INVENTIONS.

THE source of that difference of feeling with which man contemplates artificial, as contrasted with natural phenomena, becomes an important subject of inquiry. Having proved that both are of God, and that both are designed to reflect the Divine glory; how is it, that in the one, God is almost universally acknowledged, while in the other he is almost as universally disregarded? How is it that even the Bible student —absorbed though he may be with the wonders of redemption—can yet overlook any department of the works of God, or mentally exclude the Deity from the walks of science, or the achievements of art? Whence that apathy of the mechanic, which leads him to contemplate with indifference those manifestations of wisdom and goodness, which are brought to light by the investigations of philosophy, and made to minister

to human comfort by the inventions of art? How is it that a cascade or a boiling fountain —a burning volcano or an eddying whirlpool— a deep defile or a towering mountain—a brilliant star or a glowing worm—a blazing sun or a shining pearl—will tend at once to lift the meditative soul to God? And yet the same individual—be he peasant or philosopher—may be conducted through the most intricate and beautiful works of art, and recognize not *that God is there!* He may admire the complicated machinery of the spinning-mill, with its thousands of revolving wheels and belts and shafts and spindles—he may survey the mighty engine standing at majestic distance, propelling them all, in their complex and reflex revolutions, as if moved at will by some master spirit of irresistible authority—he may stand upon the beach and behold the gallant ship dashing through the angry surf, or breasting the mountain billow, propelled by the same artificial power of steam —he may mark the rapid progress of the railway train as dragged at will by the breathing locomotive—he may recognise the presence of the mimic lightning, noiselessly receiving its message, and ascending with trembling footsteps the wiry path-way to distant continents—you may show him the products of mechanical skill —inventions of every description—from the

agricultural implements of savage life to the draining, watering, reaping, threshing, steam-propelling instruments of a model farm—you may include naval architecture, from the wicker skin-covered coracle of the ancient Druid, to the British man-of-war or steam-propelled fleet—you may rise in the survey from the Oriental maiden's distaff, to the princely merchant's spinning-mill—nay, you may traverse the nave, the galleries, and the suburbs of this world's "Palace of Industry," and yet not hear one note of response to the devotional announcement of the prophet, "*this also cometh forth from the* LORD *of hosts, which is wonderful in counsel and excellent in working;*" nor one expression of sympathy with the apocalyptic elders as seen by John, casting their crowns at the feet of Him who sat upon the throne, exclaiming in holy ecstacy, "Thou art worthy, O LORD, to receive glory, and honor, and power, for Thou hast created *all things*, and for Thy glory they *are* and were created!"

For this difference of feeling in the review of mechanical inventions, as contrasted with natural objects, many reasons might be adduced and largely illustrated from human experience. Every mind might present some new phase of the subject, though all may be traced to one source—the natural atheism of depraved hu-

manity. That God is dishonored by mental exclusion from any department of His works, must be apparent to every reflecting mind. Hence, before concluding the arguments already presented, the following reasons are assigned as some of the more prominent in leading to the practical denial of the wisdom and goodness of God :—

FIRST—THE HUMAN MIND RECOGNIZES IN NATURAL PHENOMENA THE IMMEDIATE CREATIONS OF DEITY, WHILE IT BEHOLDS IN MECHANICAL INVENTIONS, THE PRODUCTIONS OF GENIUS.

This difference of conception arises not simply from that disparity which must ever exist, between the works of God, and those of the most exalted of His creatures. We admit the contrast, and hold that the mind must be atheistic, indeed, that cannot, or rather will not recognize the impress of the Divine hand upon the stupendous works of nature. The experience of David meets a response in every bosom, in which reason has not been completely perverted, when beholding the wonderful works of Deity, he exclaimed, "The heavens declare the glory of God, and the firmament sheweth His handywork." In the least—if we can pronounce upon magnitude, where creative power alone operates —as well as in the greatest the presence and

power of God are distinctly visible. The ephemeral insect, fluttering in the sunbeam, proclaims the divinity of its Author as much as the soaring eagle, borne aloft upon his untiring pinions, beyond the reach of human vision, in the azure vault of heaven. The animalculæ, whose ocean is a single drop from the stagnant pool, declares by its existence, that the life giving God *is there*, as really, as the mighty leviathan, whose watery habitation and store-house encircle the globe. The molecule of light, as truly as the blazing sun, reflects the glory of Him who dispelled chaotic darkness by the word of His power. And, what is true of one is true of all the productions of creative energy. Regarding the whole of these, the reason of the philosopher responds to the faith of the Christian while exclaiming with gratitude—

"My Father made them all."

This clearly proves, that it is not mere magnitude, nor apparent utility, which produces disparity of feeling in the contemplation of natural as contrasted with artificial phenomena. Neither is it the wonderful mechanism of the former, as compared with the latter, that gives rise to pious emotions in reviewing nature, while the review of inventions is calculated to excite only speculative ideas regarding commerce and

profit. It seems that this disparity arises partly from the association of ideas with them, as the productions of different agents. In the natural world the hand of God is seen directly and exclusively. The history of creation exhibits these objects as formed before man had a being; hence they are associated in human conception, with Divine attributes. In the artificial phenomena of the world, the hand of man is seen inclusively and proximately, consequently, overlooking the Author of the artisan, and the work of art produced, the mind is ready to associate inventions with man entirely, and to exclude from its conceptions the perfections of Deity. Forgetful of the universal Proprietor, mental associations are connected with the immediate object, and the proximate agent by which it has assumed its present form, rather than with the original elements, and the powers of genius in their relation to the Creator of both. There is thus a mental transference of the invention from God, the primary cause of its existence, to man the immediate agent employed in its construction. Thus, the steam-engine is associated with the genius of Watt, while the relations to God of the iron and brass—the water and the coal—the mental faculties and skilful hands—are completely forgotten. It is thus, that in the mental separation of the artificial, from the natural

phenomena, there is a separation of all associated ideas, and this separation extends to the Author as well as to the objects. In consequence of this, there is a corresponding transference of the glory which is due to God, to the creature employed and qualified as an agent in accomplishing the Divine purposes. This has given rise to the atheistic adage—

"God made the country, but man made the town"—

while it is evident that nothing can possibly be exhibited in the erection of the town, but the elements of which have been provided in the country, and no skill or genius can be displayed but such as God has communicated. "The earth is the LORD's and the fulness thereof, the world and they that dwell therein."

SECOND—THERE IS AN INNATE TENDENCY IN DEPRAVED HUMANITY, TO EXCLUDE THE IDEA OF GOD THE FIRST CAUSE, WHEREVER REASON CAN DISCERN THE OPERATION OF AN INTELLIGENT PROXIMATE CAUSE.

The original error of Adam is oft repeated by his posterity. He turned for happiness from the Author of his being, to the subjects of his dominion—from the Creator of all his comforts, to the creature, denied in infinite wisdom. This

is the radical error of all his fallen descendents. The more of human reason there is displayed in any object, the less is God, the Author, of reason recognized. "The fool hath said in his heart, *no God.*" Under a sense of guilt, and a consequent dread of punishment, yet resolved to gratify his depraved lusts and appetites, the desire of the heart, rather than the conviction of the understanding is, that there were no God. And, it is not in the moral world only that the unrenewed soul would seek to dethrone Jehovah. It would, if possible, banish every trace of God from the universe. The carnal mind would willingly exclude Deity from the moral world, as it has practically done from the natural and artificial; because, if convictions of the presence of God be retained, in association with any department of His works, it is impossible to extinguish a sense of responsibility. It is natural therefore, to exclude the thoughts of God from those works with which sinful man is most conversant; and especially from those artificial works in the construction or use of which selfishness, envy, jealousy, and pride, are the predominating motives. It would be difficult for the most depraved, to over-reach and defraud, in the current transactions of business, with apparent complacency, if the presence of God, even as the God of infinite wisdom and goodness

were felt, as reflected in the artificial phenomena by which the mechanic or the operative is daily surrounded. "*No God*" is consequently the wish, and *no God* is the unphilosophical conclusion attained in the face of the clearest evidence revealing His character. "It is thus that the atheistic heart makes atheistic logic."

The palpable fallacy, which would not be admitted for a moment in the simplest chain of reasoning regarding causation in the natural world, is voluntarily adopted in deciding upon the first, and fundamental question of all existence, and eternal destiny. The denial of the existence of God, or of His providential arrangements in any department of His works is not so much simple atheism, as antetheism. It is not a feeling of indifference only, in regard to that relation which man sustains to the Author of his being, but the risings of rebellion against the holy nature, and righteous claims of the moral Governor. Such sceptics cannot think of God without a sense of actual hatred. Their eyes are voluntarily closed against the evidence of His existence, because the fact of that existence to the resolute sinner is the foreboding of eternal destruction. The sceptic does violence at once to God, and to his own mental constitution. Because conscience warns him of danger, and reproves him under a sense of guilt, he would

root up this radical principle from his sentient nature. Should he succeed in obliterating the last remnants of his moral sense, or even convince himself that there is no God, will he prove a more faithful husband, a more affectionate father, a kinder master, a better servant, a more confidential friend, or a more useful member of society? Will he soar higher upon the wings of genius, than the believer in God, or leave behind him the precious ointment of a better name? The concurrent testimony of centuries proves the very opposite. The sceptic, as a moral Upas, poisons the atmosphere of society, and blights the last remnants of human happiness. How can it be otherwise? As well might the earth expect a summer, were the sun of nature blotted out from the universe! To reject the conviction that God is present, acting in, producing, regulating, restraining and overruling all facts, times, persons, and events, is to aggravate ten thousand fold the perplexities and miseries of humanity. Once drifted from the sure anchorage of faith in Divine providence, or the sense of a presiding Deity, the human soul is tossed like a shivered bark amidst the conflicting elements, without chart or compass, helm or sounding line. To such an one creation is a chaos, and thick darkness broods incessantly over its fairest scenes of life and beauty.

The events of providence to such are confusion worse confounded. What next? amid the apparently new career of uncertainties, is a question that must excite the deepest anxiety. The floating clouds of moral gloom are suspended upon all sides, which if lifted at all, only admit a sufficiency of light to make the "blackness of darkness" visible. This is no exaggeration of the sceptic's feeling. The dread reality could be illustrated by the life and deathbed of hundreds, who in the agonies of violated nature, have borne testimony to their own experience. Thus David Hume, the infidel philosopher, and avowed enemy of all true religion, recorded the writhings of his mental misery.

"I am affrighted and confounded with the forlorn solitude in which I am placed by my philosophy. When I look abroad, I see on every side dispute, contradiction, destruction. When I turn my eye inward, I find nothing but doubt and ignorance. Where am I? or what? From what cause do I derive my existence, and to what condition shall I return? I am confounded with these questions, and begin to fancy myself in the most deplorable condition imaginable, environed with the deepest darkness." This exposition of infidel experience is but the groanings of a spirit whose elementary principles have been violated by sheer enmity to that God

whom it cannot dethrone. Let another of the rebel chiefs be interrogated respecting his boasted freedom and mental independence. "Who," says Voltaire, "can without horror consider the whole world as the empire of destruction? It abounds with wonders, it abounds also with victims. It is a vast field of carnage, and contagion. Every species is without pity pursued and torn to pieces through the earth, the air, the water. In man there is more wretchedness than in all other animals put together. He loves life, and yet he knows that he must die. This knowledge is his fatal prerogative: other animals have it not. He spends the transient moments of his existence in diffusing the miseries which he suffers—cutting the throats of his fellow-creatures for pay—in cheating and being cheated—in robbing and being robbed, and in repenting of all he does. The bulk of mankind are nothing more than a crowd of wretches, equally criminal and unfortunate. I tremble at the review of this dreadful picture —I wish I had never been born."

These extracts have been introduced as faintly representing the mental conflict, by which the bosoms of the whole infidel class are torn through self-inflicted torture. It is impossible to conceive views more gloomy, out of the place of eternal doom. It is true that such men are

wont to represent Christianity, or even the belief of a God, as calculated to produce a sense of moral gloom. The theory we have been propounding would, in their estimation, be an eclipse of human glory—the suspension of a cloud over the joyous and busy scenes of human industry. But where can any thing be found in the experience of the believer akin to this? Were there ever lighter hearts, or happier workmen, than those who constructed the Tabernacle? The beams of Divinity reflected through the genius of Bezaleel and Aholiab, shed a light upon the elements of nature, which resolved every problem, and made the labors of the "wise-hearted" artificers joyous and pleasant. Would not a similar sense of the Divine presence dispel the clouds in which many of our modern mechanics are laboring in sullen gloom? And would not a believing trust in the God of providence enable many of our desponding operatives, in times of depression and trial, to say in the language of the prophet, "Although the fig-tree shall not blossom, neither shall fruit be in the vines; the labor of the olive shall fail, and the fields shall yield no meat; the flocks shall be cut off from the fold, and there shall be no herd in the stalls; yet will I rejoice in the LORD, I will joy in the God of my salvation."

It is not, however, with speculative atheism,

or antetheism, that we have more immediately to do. It is rather with that practical atheism which pervades the human heart—that tendency to forget God in the matters of common life—against which even the believer must resolutely struggle. There is a disposition to limit the presence of Deity to the highest heavens, or at least to the sacred sanctuaries raised amidst the scenes of the earth—an unbelief that would say to the Divine attributes, "Hitherto shalt thou come, but no farther." There is an expedient policy which would freely admit the Divine presence in certain peculiar circumstances of a religious kind, but which would be disposed to say, "Abide here by the sanctuary, while I go and trade yonder." This is the practical atheism which is so widely spread among all classes in our manufactories, workshops, and marts of merchandise. Of a very large proportion it may be said, in truth, that "God is not in all their thoughts." How, then, can they see His glory; either in the works of nature, or in those mechanical works which He has brought into existence, by the intervention of man as a spiritual agency?

THIRD—THE MORAL CHARACTERISTICS OF THE RESPECTIVE AGENCIES TEND TO FOSTER THAT DISPARITY OF FEELING, WHICH DISPLAYS ITSELF IN THE CONTEMPLATION OF ARTIFICIAL, AS CONTRASTED WITH NATURAL PHENOMENA.

In beholding the works of nature, the mind conceives of a holy and beneficent Being creating, arranging, and preserving all for wise and holy purposes. But in the contemplation of the most distinguished inventions, the depravity of man clings to His works in our mental conceptions. Viewed historically, also, many of the inventions of men are constructed from sinful motives, and perverted to sinful purposes. The man of brilliant genius may be, and not unfrequently is, a very wicked man; hence, by the very association of ideas, the moral character of the agent is transformed to the work of art produced. In consequence of this, the superficial thinker sees more of God in the instinct of a humble insect than in the most exalted mental powers of a distinguished genius. Thus, for example, the wonderful instincts displayed in the bee hive have elicited the admiration of heathen poets, and the highest eulogiums of Bible-taught believers; while few of either class seem to have discovered still greater wonders in the industrial instincts of their fellow-men. Why

is this ? In the contemplation of pure instinct, as displayed in the bee hive, the mind is intuitively lifted up to that God by whom it was implanted. Why are not similar, yea, sublimer, feelings excited in surveying a sugar plantation, where the works and designs are in some respects similar ? The reason is obvious. Here there is a moral eclipse ! The element of human depravity is present in full development ! The laborers are slaves. Slaves of the planter, as regards their civil rights, but worse slaves of sin, that bitter plant transmitted through the root of human depravity ! A sense of their wrongs as men, and of their guilt as transgressors, pervades every thought regarding the products of their labor. In many respects their work resembles that of the bees. Both are extracting the luscious treasures deposited in the storehouse of nature. Both are toiling with a view to personal interest, though, in the one case, every act is voluntary, with a view to enjoyment ; while, in the other, it is the result of constraint, arising from a desire to avoid a greater evil. Both are preparing luxuries for man. But among the inhabitants of the hive there is no tyranny. Tears and blood mingle not with their produce, as they frequently do with the stores extracted by the degraded slave. Their song mingles with the melody of nature, while joy-

fully hastening from flower to flower, beneath the bright ray of the summer sun. They sip, as necessity requires, their own sweet nectar, during the dreary months of winter. Whereas the poor slave too frequently mingles his sigh with the pestilential breeze. He is moved like a mere machine, by propulsion from without, preparing the juice of the sugar cane to sweeten the European cup of comfort, without knowing the pleasure of possessing, or the luxury of enjoying, the fruits of his toil. Besides, in the happy hive, there is no rude violence, no swearing, no profane language, no dissipation, no immorality. It is far otherwise, not only with the benighted slave in the toils of the plantation, but with the sons of boasted freedom in the factory and the workshop. The most splendid achievements of art are too frequently stained by the immorality of the artisan. The obscene jests and profane oaths of our manufactories, not unfrequently tarnish their brightest ornaments in our moral conceptions. Now, as all these elements of thought are combined in beholding the works of art, the mind insensibly not only detracts from the manifestations of Deity therein exhibited, but is disposed to consider them as though they were completely separated from God, their divine author. Even the pious mind is ready to yield to the feeling, that if a genuine servant

of God can scarcely occupy a place in many of our public works, without his soul being daily vexed with the profane conversation of his companions in labor, how can God Himself be there? But this is to overlook the fact of His omnipresence, to exclude the idea of His universal dominion, and to forget that He employs even wicked men as the ministers of comfort to humanity; and, as in the case of Balak and Balaam, makes the wrath of man to praise Him.

In the latter day, when "knowledge shall be increased," and when the "wise-hearted" and the "willing-hearted" shall provoke each other to love and good works—when "holiness unto the LORD shall be upon the bells of the horses, and every pot in Jerusalem shall be holy," then the mists of infidelity shall for ever vanish, and the monuments of human skill shall be no longer tarnished by the rust of immorality. Every trophy of genius shall reflect the glory of God, and point the thoughts of man to the bountiful Benefactor.

FOURTH—FROM THE COMMON POINT OF OBSERVATION, MEN ARE MORE AFFECTED BY PROXIMATE OBJECTS ADDRESSED TO SENSE, THAN BY A REMOTE SPIRITUAL OBJECT ADDRESSED TO FAITH.

This might be illustrated largely both from reason and Revelation. The atheistic philosopher recognizes a certain connexion between cause and effect in nature, though he admits not the same connexion between the world and God, as the source of all causation. He believes that fire burns—that light dispels the deepest darkness, but he believes not that "the worlds were framed by the word of God"—that the original darkness was made to vanish when "God said, Let there be light, and there was light." Thus also he beholds the triumphs of science and art, as the productions of applied genius; while he is told in vain of that God by whom the materials were deposited at earth's formation, by whom the body and the soul of the artificer were created at the appointed time, and by whose Spirit that genius was inspired, wherewith the forms of utility and beauty were successively evolved. Nor is this fallacy common only to the sceptic. It pervades the entire constitution of fallen humanity, and is displayed in subjects of eternal importance.

How difficult, at any time, and even upon subjects the most momentous, to arouse human activity, or to excite personal interest, by the strongest appeals to motives presented only to faith? Tell a man that a fire has broken out upon the side of the city opposite to that in which he dwells, and tell him of the possibility that the consuming flames may reach his habitation in their dire progress; how comparatively small his excitement, because the distance of the fire, which he has not yet seen, affords hope of escape. But let the same man see his nearest neighbor's house ignited, his fears are at once awakened, and all his activities put forth to avert the impending danger. Or, to apply the same test in reference to things temporal and spiritual, the burning roof of a human dwelling will present stronger inducements to activity upon the part of the inmates, than the fullest description which the Bible gives of the "worm that dieth not, and of the fire that shall never be quenched," as the final portion of the impenitent sinner. And why is this, but because of the unbelief of the carnal heart? Depraved man is more affected by the temporal calamity addressed to sense, and in immediate prospect, than by the dreadful infliction of eternal punishment, as addressed to faith, but seemingly far in the distance.

Thus it is with mechanical inventions, when compared with natural objects. Sense seizes the inventor, or the artisan, being the proximate agent, glad to discover an intelligent cause upon its own level; while faith must rise above the intermediate agency to the first cause, or Author of both the agent and his work. Nor is this all. In such a mental process the mind is carried above and beyond an agent to whom it feels a natural approximation, to one at an infinite distance, both natural and moral. It is only the believer in God who "walks by faith, and not by sight;" and, consequently, the medium through which God reveals his attributes, both in the book of nature and the book of providence, is mistaken for himself. Hence the praise that is due to His name, from every new discovery and mechanical invention, is freely lavished upon the intelligent instrument by whom it has been introduced to the notice of the world. As reasonably might the honor of a victory be ascribed to the warrior's steed, or the regal homage rendered to a beloved Sovereign be lavished upon the state chariot by which the royal personage was borne through the streets of the capital to the palace and the throne, as to give to man, the created instrument, the honor which is due to God the Author! Hence, we infer, that the enlightened

citizen who worships genius, and who makes the gifts of heaven an occasion of rebellion, dishonors God more than the degraded Indian who bows down to the dragon-fly sporting in the sunbeam, or renders homage to the base reptile crawling in the dust !

FIFTH—THE TENDENCY OF HUMAN PRIDE IS TO EXALT THE CREATURE, AND DETHRONE THE CREATOR.

It is generally believed that pride lay at the root of the first development of moral evil in the universe. It entered largely into the first temptation. "Ye shall be as gods, knowing good and evil." It has characterized the whole history of man's rebellion against God. It is the last point yielded in the subjugation of the soul by the power of the Spirit ; and all other elements, it forms a chief ingredient in that alienation of the heart from God, which leads man to reject, even the overtures of redeeming love. That native pride, which would dethrone the Deity in the moral world, is equally ready to disown him in the primary works of creation, and in the progressive emanations of wisdom, power, and goodness, as these are displayed in the dispensations of Providence. This characteristic of depraved humanity is well described by the Scottish poet Pollok, when he says—

"Pride, self-adoring pride; was primal cause
Of all sin past, all pain, all woe to come.
Unconquerable pride; first, eldest sin,
Great fountain head of evil! highest source,
Whence flowed rebellion 'gainst the Omnipotent.
Whence hate of man, and all else ill.
Pride at the bottom of the human heart
Lay, and gave root and nourishment to all
That grew above. Great ancestor of vice!
Hate, unbelief, and blasphemy of God.
Pride . . . . . .
It was the ever moving, acting force,
The constant aim, and the most thirsty wish
Of every sinner unrenewed, to be
A God; in purple, or in rags to have
Himself adored."

SIXTH—GENERAL NEGLECT IN CULTIVATING THAT PIOUS SPIRIT OF OBSERVATION, WHICH RECOGNIZES GOD IN EVERY EVENT AND OBJECT, TENDS TO THE EXCLUSION OF THE RECOGNITION OF DEITY IN RELATION TO MECHANICAL INVENTIONS.

The habit of spiritual contemplation must be cherished in order to its growth, and general application in viewing the objects with which we are surrounded. In savage life the sublimest objects of nature excite no perceptions of beauty, and awake no feelings of interest, unless when associated with acts of idolatrous worship. Those scenes of nature which awake the sublimest strains of poetry, and which elicit the most glowing descriptions from the cultivated tourist, move not the lethargic soul of the child

of ignorance. Nor is this absence of the contemplative spirit confined to the untutored savage; it is common to all in whom the habit of observation has not been cherished. The rustic, though surrounded by the most cultivated minds, if unaccustomed to reflection, will see nothing to admire even in nature's beauty.

> "The primrose by the river's brim
> A *yellow* primrose is to him,
> And it is nothing more."

It cannot for a moment arrest his thought, nor excite any peculiar emotions. But to the botanist it is invested with scientific interest. To the believing observer of nature's profusion, its fragrance and beauty are calculated to awaken the liveliest emotions of gratitude to that God who has constituted the world not only a store-house of essential provisions, but also a floral depository of beauty's choicest treasures.

The cultivation of taste invests every object with peculiar interest. This interest once excited, and associated with faith in God, must necessarily lead the mind from nature to the Author of all existence; and also from the transitory operations of nature to the embodied acts of Divine Providence. In a similar way, the sanctified cultivation of science and art, and the pious habit of viewing mechanical objects in

relation to the moral government of God, and the happiness of His creatures, must necessarily tend to enlarge our conceptions of Divine wisdom, power, and goodness. Were pious parents imbued with the same sense of the providence of God, in leading their children through the productions of art, which many are, in beholding and in directing the youthful mind to the wonders of nature, there is reason to hope that at no distant period, the region of artificial, might re-echo in unison with the world of natural phenomena, proclaiming the presence and power of Deity to every beholder. Then would all feel disposed to respond to the Psalmist, when lifting up his soul in the contemplations of Divine goodness, he exclaims, "Thy works praise Thee, O LORD, Thy saints bless Thee."

These reasons for the non-recognition of God in the works of art can furnish no excuse to the Bible reader. In the teachings of the sacred volume, every element, and object, and creature, are traced to God as their Author, and to the manifestation of the Divine glory as their end. The rightful claim, as Author of man, and all the works and wisdom of man, He will not forego—the glory He will not give to another. The earth replenished with the descendents of Adam, the earth transformed by human ingenuity—is under tribute to God in every ele-

ment, in every existence, in every invention, as really as it was when originally created. Hence we infer that the non-recognition of God, in relation to any object, is the practical embodiment of infidelity; and that the worship of genius by a refined and civilized people is more offensive to the God of Revelation than even the superstitious homage which the benighted nations of heathenism render to their imaginary deities. Is it, therefore, any wonder, when that God who sent the pestilence with the miraculous provision of the ungrateful Israelites, should send at times increase of misery with mechanical gifts to a people who will not so much as acknowledge their Author? The gift is not withheld—the Divine purpose is accomplished—but the invention, like the world under the curse, is restrained in its ultimate power to bless, until the receiver shall recognize the beneficence of the giver, and until the benediction of the moral Governor shall accompany the machinery bestowed. The extension of Scriptural knowledge shall ultimately lead to the universal recognition of the claims of Jehovah. When the way of the LORD is known upon the earth, and His saving health among the nations, "Then shall the earth yield her increase; and God, even our God, shall bless us. God shall bless us; and all the ends of the earth shall fear Him."

IN CONCLUSION.

Let none despise the sons of toil. They are a part of the machinery by which the beneficent purposes of God are accomplished. Let none be ashamed of the duties of his humble calling To labor was honorable in Paradise before the fall. It has opened up the path to honor ever since, and shall in the Providence of God usher in the physical comfort, and social honors of the Millennial world. Let the operative bless God for the means of employment, and the implements of industry. Let the artisan study closer the elements of nature, that he may appropriate and employ them for the benefit of mankind. Let those who are relieved from harassing labor devote their leisure hours to the acquisition of knowledge, and the objects of philanthropy. Let genius bow in reverent homage to the God of infinite wisdom who giveth to all men liberally, and upbraideth not. Let none be exalted in the achievements of human ingenuity. The triumphs of science are not the products of finite wisdom, but the revelations of eternal purposes—the footprints of Omnipotence, upon the sands of human existence. The tide of popularity, or the whirlpool of selfishness, may for a season seem to obliterate the primary impression, but the world shall yet discover *that*

God was there, and in the end it will be patent to every observer that, as there is nothing useless in the kingdom of nature, so there is nothing superfluous or wanting in the kingdom of Providence. Even now it is evident, to every reflecting mind, that those inventions which prove a failure, as regards the object of the artisan, and which are not unfrequently the jest of the scientific world, are yet made subservient to the designs of God, by stirring up other minds through which He communicates other implements. "Thus saith the LORD, let not the wise man glory in his wisdom, neither let the mighty man glory in his might, let not the rich man glory in his riches; but let him that glorieth glory in this, that he understandeth and knoweth Me, that I am the LORD, which exercise *loving kindness*, judgment, and righteousness in the earth."

Let us carry a sense of the Divine presence into all the walks and relations of life. Let the eye of faith gaze upon every aspect of artificial phenomena, as it does upon the changing scenes of the vast and sublime in nature. In every distinguished genius, let us see the reflection of fresh rays from the central Sun of the universe. In every discovery, let us behold the dawning beams of that Divine light which is destined to illuminate our world. And while we mark the

rapid progress of this enterprising age, let us behold with joy the majestic shadow of Omnipotence sweeping over the currents of time, adjusting the most complicated events, while restraining the influence of the most refractory agents, and directing the steps of the wise and the prudent. It is thus that the providence of God is found seizing the elements of mind and of matter, in order to combine, harmonize, and reproduce them in mechanical form, for the advancement of His glory, in the comfort and happiness of man. And while we gaze in wonder at the works of nature, and while we turn in amazement at the marvels of art, let us hear the re-echo of the voice of the Eternal, as it once came from the throne of universal dominion—"I am the Lord; that is My name, and My glory will I not give to another."

Let those who mingle with the scenes and subjects of toil, be reminded by the revolving machinery, of the goodness of that God who directs and sustains the mechanism of the universe. Let the manifestations of Infinite Wisdom sweeten the hours of labor, and dispel from the mind those gloomy clouds of discontentment, which are evidently of Satan's brooding, and which ascend as the poisoned malaria of envy from the bottomless pit. The design of the seducer is to spread a cloud of gloom over

every portion of human history, and to render the descendents of Adam dissatisfied amidst the profusion of Divine beneficence, as their first father was with the fulness of Paradise. Thus, by exciting the feelings of jealousy, man is made the enemy of his fellow-man, and class is leagued against class in the social fabric. Ought not those who are dependent on the same bounty to live in amity? Why should any aggravate the trials of a fellow-laborer, or increase the sorrows of a dependent? Should not all rather unite in the song of praise with the symphony of nature? Let the cords of mutual sympathy be drawn closer around the hearts of those who employ and those who labor, that both may occupy their appropriate sphere, and each fulfil his relative destiny. Let all look above the dictates of human wisdom, and the acts of human legislation, to the administration of the Moral Governor. He alone can open the channels of national or personal sustenance. He alone can solve the hidden problems of science and of social comfort!

That there is approaching a physical, as well as an Ecclesiastical and Political, Millennium, the Bible plainly testifies. Until it dawns upon the benighted world, let faith and hope oil the wheels of industry. Let gratitude for the gifts bestowed excite to greater diligence in personal and rela-

tive duty. The whole circle of the sciences—the entire development of the arts—the expansion of human knowledge—the progression of civil liberty—and the increasing wealth of nations, have an immediate bearing upon the Church of Christ. And, as easily as He obtained the services of the ass's colt upon which He rode in triumph to Jerusalem, so He can render the whole artificial phenomena of the world subservient to His purposes, when "the Divine glory shall be revealed, and all flesh shall see it together." As the devout astronomer rejoices in the discovery of a new planet, and hails with adoring wonder the approaching silver beams of some distant sun, to us only a star, so let our philosophy stand upon the watch-tower, with the torch of Divine truth in her hand, which will, in every event and object, declare a present God; and ever and anon, as new discoveries burst upon the mental world, and original works of art are deposited in the temples of industry, let there be heard from within a voice proclaiming their Divine Author, and let them find in the soul of the spectator a spiritual response, corresponding to the language of David, "O that men would praise the Lord for His goodness, and for His wonderful works to the children of men!"

How happy would be the inmates of our work-

shops and factories, were all imbued with the spirit of the Gospel, and all impressed with the presence of Deity? Then would fellow-laborers provoke each other to love and to good works. The language of faith would find embodiment in such poetic effusions as the following, addressed by an artisan to his companions, during the elemental strife of Chartism, which seemed ready to explode in a social revolution:—

"God, my brothers, will not leave us,
Still His heaven is o'er us bent;
His commandments are not grievous,
Do His will, and be content.
Only truth and love shall flourish,
In the end, beloved mates;
Only charity can nourish
Those whom charity creates.
Believe in God.

"You have wrongs by forge and furnace,
You have darkness, you have dread,
But you work in radiant harness,
And your God is overhead.
Does not night bring forth the morning?
Does not darkness father light?
Even now we have forewarning,
Brothers, of the close of night.
Believe in God.

"Many, many are the shadows
That the dawn of truth reveals;
Beautiful on life's broad meadows
Is the light the Christian feels.

Evil shall give place to goodness,
Wrong be dispossess'd by right;
Out of old chaotic rudeness
God evokes a world of light.
Believe in God.

"Do ye toil? O, freer, firmer
Ye shall grow beneath your toil;
Only craven spirits murmur,
Lightly rooted in the soil.
Through the gloom, and through the darkness,
Through the danger and the dole,
Through the mist and through the murkness,
Travels the great human soul.
Believe in God.

"I through doubt and darkness travel,
Through the agony and gloom,
Hoping that I shall unravel
This strange web beyond the tomb.
O, my brothers! men heroic!
Workers both with hand and brain!
'Tis the Christian, not the Stoic,
That best triumphs over pain.
Believe in God.

"O, my brothers! love and labor,
Conquer wrong by doing right;
Truth alone must be your sabre,
Love alone your shield in fight.
Virtues yet shall cancel vices;
Look above, beloved mates!
Only God Himself suffices
Those whom God alone creates.
Believe in God."

THE END.

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